Computer algebra independent integration tests

5-Inverse-trig-functions/5.4-Inverse-cotangent/5.4.1-Inverse-cotangent-functions

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Contents

Chapter 1

Introduction

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

The number of integrals in this report is [234]. This is test number [154].

1.1 Listing of CAS systems tested

The following systems were tested at this time.

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

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

Sympy was called directly using Python.

1.2 Results

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

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

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

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

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

System	solved	Failed
Rubi	% 100.00 (234)	% 0.00 (0)
Mathematica	% 98.29 (230)	% 1.71 (4)
Maple	% 97.44 (228)	% 2.56 (6)
Maxima	% 60.68 (142)	% 39.32 (92)
Fricas	% 71.79 (168)	% 28.21 (66)
Sympy	% 35.04 (82)	% 64.96 (152)
Giac	% 47.44 (111)	% 52.56 (123)
Mupad	% 46.15 (108)	% 53.85 (126)

Table 1.1: Percentage solved for each CAS

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

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

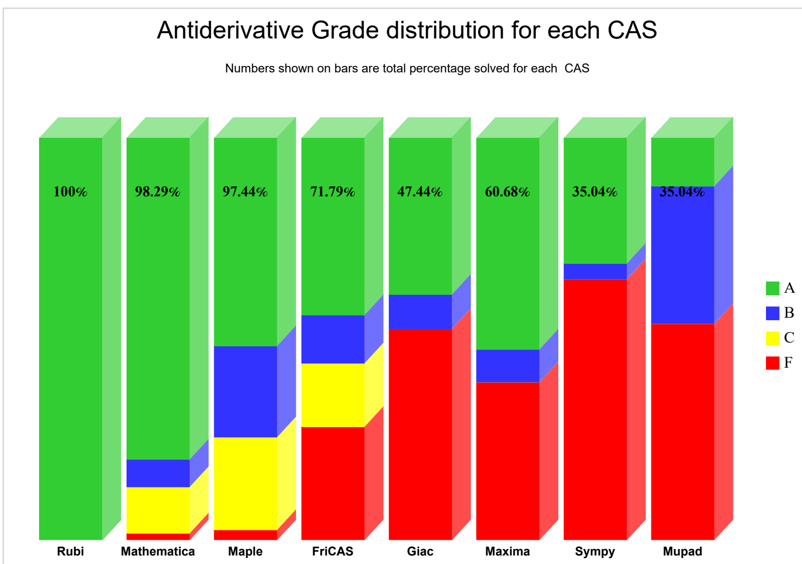
Table 1.2: Description of grading applied to integration result

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

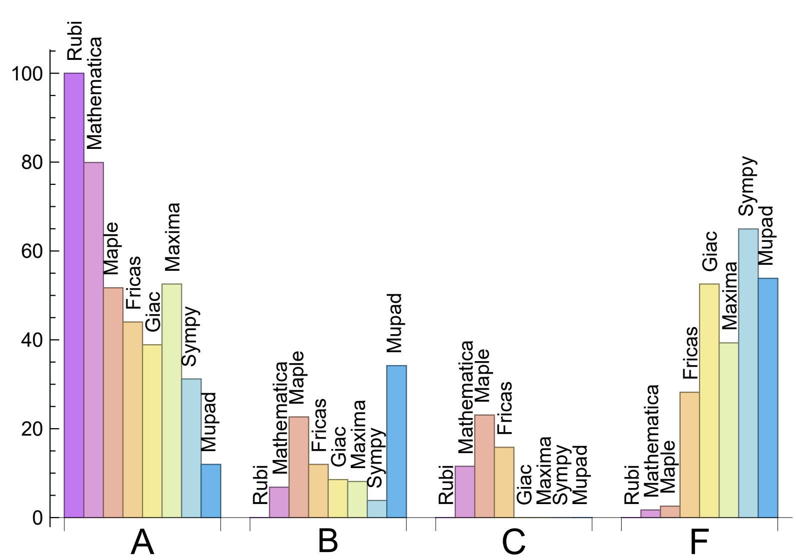
System	% A grade	% B grade	% C grade	% F grade
Rubi	100.00	0.00	0.00	0.00
Mathematica	79.91	6.84	11.54	1.71
Maple	51.71	22.65	23.08	2.56
Maxima	52.56	8.12	0.00	39.32
Fricas	44.02	11.97	15.81	28.21
Sympy	31.20	3.85	0.00	64.96
Giac	38.89	8.55	0.00	52.56
Mupad	11.97	34.19	0.00	53.85

Table 1.3: Antiderivative Grade distribution of each CAS

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



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



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

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

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

System	Number failed	Percentage normal failure	Percentage timeout failure	Percentage exception failure
Rubi	0	0.00 %	0.00 %	0.00 %
Mathematica	4	100.00 %	0.00 %	0.00 %
Maple	6	100.00 %	0.00 %	0.00 %
Maxima	92	69.57 %	11.96 %	18.48 %
Fricas	66	98.48 %	0.00 %	1.52 %
Sympy	152	48.68 %	34.87 %	16.45 %
Giac	123	88.62 %	10.57 %	0.81 %
Mupad	126	100.00 %	0.00 %	0.00 %

Table 1.4: Time and leaf size performance for each CAS

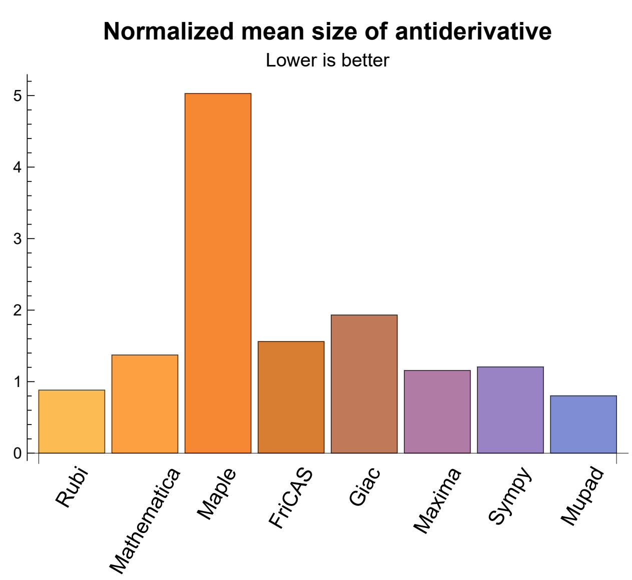
1.3 Performance

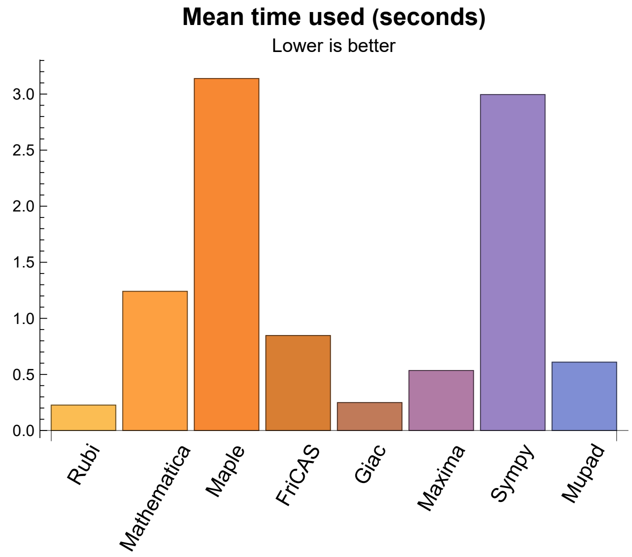
The table below summarizes the performance of each CAS system in terms of CPU time and leaf size of results.

System	Mean time (sec)	Mean size	Normalized mean	Median size	Normalized median
Rubi	0.23	133.07	0.88	91.00	1.00
Mathematica	1.24	200.26	1.37	95.50	0.91
Maple	3.14	1092.66	5.03	147.50	1.40
Maxima	0.53	213.29	1.16	54.00	0.93
Fricas	0.85	241.46	1.56	64.50	1.04
Sympy	3.00	83.11	1.21	39.00	0.96
Giac	0.25	211.05	1.93	38.00	1.00
Mupad	0.61	60.05	0.80	31.00	0.83

Table 1.5: Time and leaf size performance for each CAS

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





1.4 list of integrals that has no closed form antiderivative

{34, 35, 59, 60, 116, 117, 120, 121, 128, 147, 148, 151, 155, 156, 161, 165, 169, 174, 178, 182, 187, 191, 195, 199, 204, 208, 212, 216}

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

Rubi {}

Mathematica {116, 117, 120, 121}

Maple {}

Maxima {}

Fricas {}

Sympy {}

Giac {}

Mupad {}

1.6 list of integrals solved by CAS but failed verification

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

Rubi {107, 109, 110}

Mathematica {13, 15, 17, 18, 19, 21, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 38, 40, 42, 44, 47, 48, 49, 50, 57, 58, 65, 66, 103, 107, 108, 109, 110, 113, 114, 115, 116, 117, 118, 119, 120, 121, 133, 136, 137, 138, 140, 141, 142, 143, 145, 160, 164, 168, 173, 177, 181, 229, 230, 231, 232, 233, 234}

Maple Verification phase not implemented yet.

Maxima Verification phase not implemented yet.

Fricas Verification phase not implemented yet.

Sympy Verification phase not implemented yet.

Giac Verification phase not implemented yet.

Mupad Verification phase not implemented yet.

1.7 Timing

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

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

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

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

1.8 Verification

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

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

1.9 Important notes about some of the results

1.9.1 Important note about Maxima results

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

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

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

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

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

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

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

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

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

1.9.2 Important note about FriCAS and Giac/XCAS results

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

These will fail With error `Exception raised: NotImplementedError`

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

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

1.9.3 Important note about finding leaf size of antiderivative

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

The other CAS systems (SageMath and Sympy) do not have special buildin function for this purpose at this time. Therefore the leaf size for Fricas and Sympy and Giac antiderivatives is determined using the following function, thanks to user `slelievre` at https://ask.sagemath.org/question/57123/could-we-have-a-leaf_count-function-in-base-sagemath/

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

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

```
try:
```

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

except Exception as ee:
       leafCount =1
```

1.9.4 Important note about Mupad results

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

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

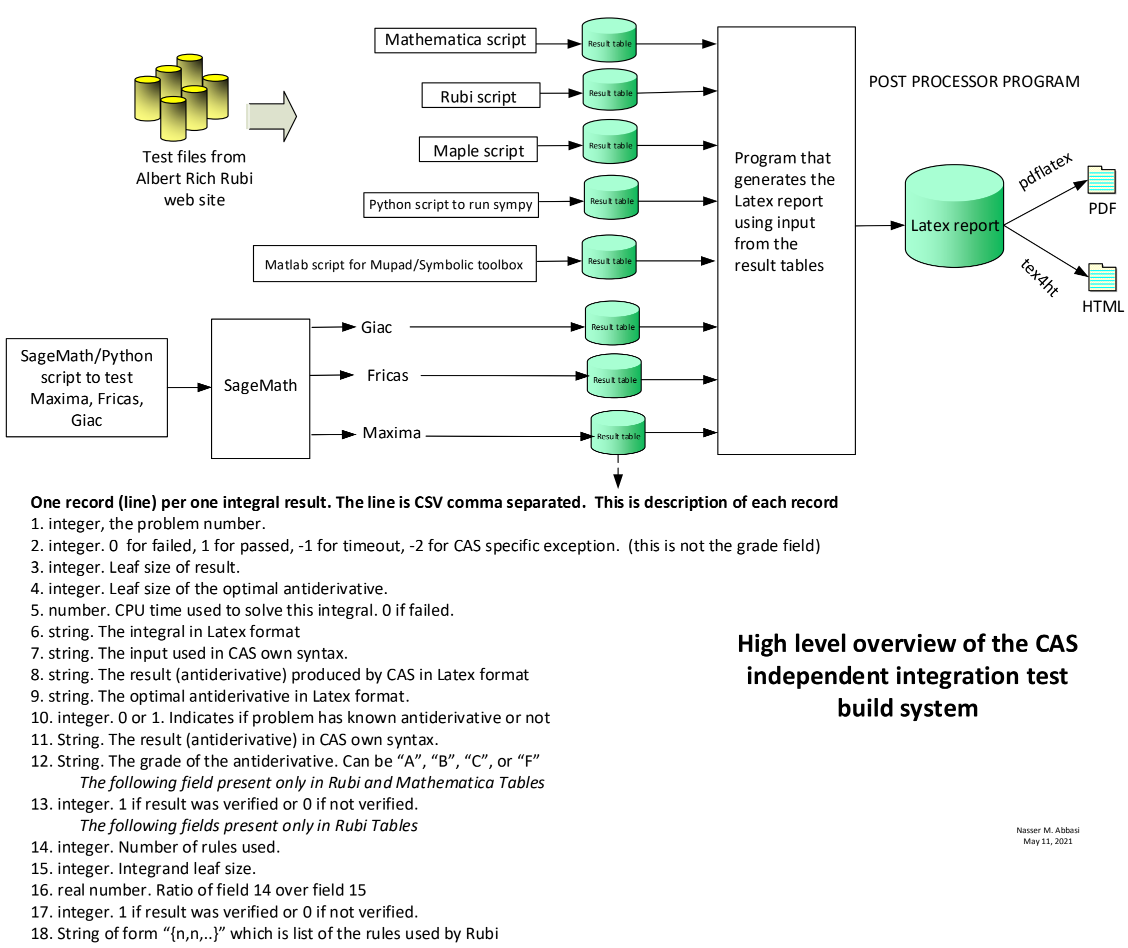
The following is an example of using Matlab's symbolic toolbox (Mupad) to solve an integral

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

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

1.10 Design of the test system

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



Chapter 2

detailed summary tables of results

2.1 List of integrals sorted by grade for each CAS

2.1.1 Rubi

A grade: { 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234 }

B grade: { }

C grade: { }

F grade: { }

2.1.2 Mathematica

A grade: { 1, 2, 3, 4, 5, 6, 7, 8, 10, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 39, 41, 43, 45, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 80, 81, 82, 83, 84, 85, 86, 87, 88, 91, 92, 93, 94, 95, 96, 97, 98, 102, 107, 109, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 124, 125, 126, 127, 128, 132, 133, 136, 137, 138, 140, 142, 143, 145, 146, 147, 148, 149, 150, 151, 154, 155, 156, 157, 158, 159, 161, 162, 163, 165, 166, 167, 169, 170, 171, 172, 174, 175, 176, 178, 179, 180, 182, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 234 }

B grade: { 38, 40, 42, 46, 103, 108, 110, 141, 160, 164, 168, 173, 177, 181, 183, 200 }

C grade: { 9, 11, 44, 61, 62, 63, 64, 79, 89, 90, 99, 100, 101, 104, 105, 106, 123, 129, 130, 131, 134, 135, 217, 230, 231, 232, 233 }

F grade: { 139, 144, 152, 153 }

2.1.3 Maple

A grade: { 1, 2, 3, 4, 5, 6, 8, 9, 10, 11, 12, 14, 16, 20, 22, 23, 25, 27, 31, 33, 34, 35, 37, 39, 41, 43, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 59, 60, 65, 66, 70, 71, 72, 73, 74, 75, 76, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 89, 90, 91, 92, 93, 94, 95, 96, 99, 100, 101, 102, 103, 104, 105, 106, 108, 109, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 125, 128, 131, 132, 133, 134, 135, 145, 147, 148, 149, 151, 155, 156, 157, 161, 165, 169, 174, 178, 182, 187, 191, 195, 199, 204, 208, 212, 216, 219, 220, 224, 227, 228 }

B grade: { 7, 13, 15, 17, 19, 21, 28, 38, 40, 42, 44, 57, 58, 88, 97, 107, 113, 124, 126, 127, 129, 130, 136, 137, 138, 140, 141, 142, 143, 152, 153, 154, 160, 164, 168, 170, 173, 177, 181, 186, 190, 194, 198, 203, 207, 211, 215, 218, 221, 222, 223, 225, 226 }

C grade: { 18, 24, 26, 29, 30, 32, 67, 68, 69, 77, 98, 110, 111, 112, 139, 144, 150, 158, 159, 162, 163, 166, 167, 171, 172, 175, 176, 179, 180, 183, 184, 185, 188, 189, 192, 193, 196, 197, 200, 201, 202, 205, 206, 209, 210, 213, 214, 217, 229, 230, 231, 232, 233, 234 }

F grade: { 36, 61, 62, 63, 64, 146 }

2.1.4 Maxima

A grade: { 1, 2, 3, 4, 5, 6, 8, 9, 10, 11, 12, 14, 16, 20, 22, 34, 35, 37, 39, 41, 43, 45, 46, 48, 50, 51, 52, 53, 54, 55, 56, 57, 58, 60, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 89, 90, 91, 92, 93, 94, 95, 96, 99, 100, 101, 102, 103, 104, 105, 106, 109, 116, 117, 120, 121, 123, 125, 129, 130, 131, 132, 134, 135, 147, 148, 149, 150, 151, 155, 156, 157, 170, 187, 191, 192, 193, 194, 195, 196, 197, 198, 199, 204, 208, 209, 210, 211, 212, 213, 214, 215, 216, 218, 221, 224, 227, 228, 229, 230, 231, 232, 233, 234 }

B grade: { 7, 77, 88, 98, 107, 108, 110, 122, 124, 126, 127, 160, 162, 163, 164, 166, 167, 168, 173 }

C grade: { }

F grade: { 13, 15, 17, 18, 19, 21, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 36, 38, 40, 42, 44, 47, 49, 59, 61, 62, 63, 64, 65, 66, 97, 111, 112, 113, 114, 115, 118, 119, 128, 133, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 152, 153, 154, 158, 159, 161, 165, 169, 171, 172, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 188, 189, 190, 200, 201, 202, 203, 205, 206, 207, 217, 219, 220, 222, 223, 225, 226 }

2.1.5 FriCAS

A grade: { 1, 2, 3, 4, 5, 6, 8, 9, 10, 11, 12, 14, 16, 20, 22, 34, 35, 37, 39, 41, 43, 45, 51, 52, 53, 54, 55, 56, 59, 60, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 78, 79, 82, 85, 86, 87, 89, 90, 91, 92, 93, 94, 95, 96, 97, 99, 100, 101, 102, 104, 105, 106, 116, 117, 120, 121, 122, 123, 125, 129, 130, 131, 132, 134, 147, 148, 149, 150, 151, 155, 156, 157, 161, 165, 169, 170, 174, 177, 178, 181, 182, 187, 191, 195, 199, 204, 208, 212, 216, 224, 227, 228, 234 }

B grade: { 61, 62, 63, 64, 80, 81, 83, 84, 135, 160, 164, 168, 173, 186, 190, 194, 198, 203, 207, 211, 215, 218, 221, 229, 230, 231, 232, 233 }

C grade: { 158, 159, 162, 163, 166, 167, 171, 172, 175, 176, 179, 180, 183, 184, 185, 188, 189, 192, 193, 196, 197, 200, 201, 202, 205, 206, 209, 210, 213, 214, 217, 219, 220, 222, 223, 225, 226 }

F grade: { 7, 13, 15, 17, 18, 19, 21, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 36, 38, 40, 42, 44, 46, 47, 48, 49, 50, 57, 58, 65, 66, 77, 88, 98, 103, 107, 108, 109, 110, 111, 112, 113, 114, 115, 118, 119, 124, 126, 127, 128, 133, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 152, 153, 154 }

2.1.6 Sympy

A grade: { 1, 2, 3, 4, 5, 6, 8, 9, 10, 11, 12, 14, 16, 20, 22, 34, 35, 37, 39, 41, 43, 45, 51, 52, 53, 54, 55, 56, 59, 60, 70, 74, 75, 76, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 92, 93, 94, 96, 99, 100, 101, 102, 116, 117, 120, 121, 122, 123, 125, 128, 129, 130, 131, 132, 149, 151, 155, 156, 161, 170, 187, 227, 228 }

B grade: { 71, 89, 90, 91, 95, 104, 105, 106, 157 }

C grade: { }

F grade: { 7, 13, 15, 17, 18, 19, 21, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 36, 38, 40, 42, 44, 46, 47, 48, 49, 50, 57, 58, 61, 62, 63, 64, 65, 66, 67, 68, 69, 72, 73, 77, 88, 97, 98, 103, 107, 108, 109, 110, 111, 112, 113, 114, 115, 118, 119, 124, 126, 127, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 150, 152, 153, 154, 158, 159, 160, 162, 163, 164, 165, 166, 167, 168, 169, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 229, 230, 231, 232, 233, 234 }

2.1.7 Giac

A grade: { 1, 2, 3, 4, 5, 7, 8, 9, 10, 11, 20, 22, 31, 34, 35, 41, 43, 45, 51, 52, 53, 54, 55, 56, 59, 60, 61, 62, 63, 64, 67, 68, 69, 70, 71, 74, 75, 76, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 116, 117, 120, 121, 126, 128, 147, 148, 150, 151, 155, 156, 157, 161, 165, 169, 170, 174, 178, 182, 187, 191, 195, 199, 204, 208, 212, 216, 227, 228, 229, 230, 233, 234 }

B grade: { 6, 99, 100, 101, 102, 104, 105, 106, 122, 123, 124, 125, 127, 129, 130, 131, 132, 134, 135, 149 }

C grade: { }

F grade: { 12, 13, 14, 15, 16, 17, 18, 19, 21, 23, 24, 25, 26, 27, 28, 29, 30, 32, 33, 36, 37, 38, 39, 40, 42, 44, 46, 47, 48, 49, 50, 57, 58, 65, 66, 72, 73, 77, 97, 98, 103, 107, 108, 109, 110, 111, 112, 113, 114, 115, 118, 119, 133, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 152, 153, 154, 158, 159, 160, 162, 163, 164, 166, 167, 168, 171, 172, 173, 175, 176, 177, 179, 180, 181, 183, 184, 185, 186, 188, 189, 190, 192, 193, 194, 196, 197, 198, 200, 201, 202, 203, 205, 206, 207, 209, 210, 211, 213, 214, 215, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 231, 232 }

2.1.8 Mupad

A grade: { 34, 35, 59, 60, 116, 117, 120, 121, 128, 147, 148, 151, 155, 156, 161, 165, 169, 174, 178, 182, 187, 191, 195, 199, 204, 208, 212, 216 }

B grade: { 1, 2, 3, 4, 5, 6, 8, 9, 10, 11, 12, 14, 16, 17, 20, 22, 37, 39, 41, 43, 45, 51, 52, 53, 54, 55, 56, 70, 71, 72, 73, 74, 75, 76, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 89, 90, 91, 93, 94, 95, 96, 99, 100, 101, 102, 104, 105, 106, 122, 123, 125, 129, 130, 131, 132, 134, 135, 138, 149, 150, 157, 170, 227, 228, 229, 230, 231, 232, 233, 234 }

C grade: { }

F grade: { 7, 13, 15, 18, 19, 21, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 36, 38, 40, 42, 44, 46, 47, 48, 49, 50, 57, 58, 61, 62, 63, 64, 65, 66, 67, 68, 69, 77, 88, 92, 97, 98, 103, 107, 108, 109, 110, 111, 112, 113, 114, 115, 118, 119, 124, 126, 127, 133, 136, 137, 139, 140, 141, 142, 143, 144, 145, 146, 152, 153, 154, 158, 159, 160, 162, 163, 164, 166, 167, 168, 171, 172, 173, 175, 176, 177, 179, 180, 181, 183, 184, 185, 186, 188, 189, 190, 192, 193, 194, 196, 197, 198, 200, 201, 202, 203, 205, 206, 207, 209, 210, 211, 213, 214, 215, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226 }

2.2 Detailed conclusion table per each integral for all CAS systems

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

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

Problem 1	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	51	51	51	42	47	41	48	59	55
normalized size	1	1.00	1.00	0.82	0.92	0.80	0.94	1.16	1.08
time (sec)	N/A	0.025	0.003	0.039	0.412	0.908	1.218	0.128	0.805

Problem 2	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	49	49	49	42	46	45	46	74	56
normalized size	1	1.00	1.00	0.86	0.94	0.92	0.94	1.51	1.14
time (sec)	N/A	0.036	0.016	0.037	0.311	0.536	0.874	0.123	0.700

Problem 3	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	41	41	41	34	38	32	39	51	46
normalized size	1	1.00	1.00	0.83	0.93	0.78	0.95	1.24	1.12
time (sec)	N/A	0.021	0.003	0.038	0.409	1.015	0.680	0.128	0.721

Problem 4	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	39	39	39	34	36	37	37	64	49
normalized size	1	1.00	1.00	0.87	0.92	0.95	0.95	1.64	1.26
time (sec)	N/A	0.026	0.008	0.040	0.309	0.730	0.476	0.115	0.688

Problem 5	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	31	31	31	26	28	23	31	36	39
normalized size	1	1.00	1.00	0.84	0.90	0.74	1.00	1.16	1.26
time (sec)	N/A	0.012	0.002	0.038	0.407	0.676	0.339	0.131	0.757

Problem 6	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	24	24	24	23	24	24	24	45	22
normalized size	1	1.00	1.00	0.96	1.00	1.00	1.00	1.88	0.92
time (sec)	N/A	0.006	0.003	0.037	0.320	0.753	0.214	0.108	0.136

Problem 7	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	F	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	37	37	37	63	56	0	0	38	-1
normalized size	1	1.00	1.00	1.70	1.51	0.00	0.00	1.03	-0.03
time (sec)	N/A	0.025	0.003	0.056	0.457	0.979	0.000	0.128	0.000

Problem 8	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	30	30	30	31	30	31	24	32	28
normalized size	1	1.00	1.00	1.03	1.00	1.03	0.80	1.07	0.93
time (sec)	N/A	0.018	0.003	0.042	0.308	0.783	0.283	0.126	0.235

Problem 9	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	31	31	36	26	23	24	24	40	44
normalized size	1	1.00	1.16	0.84	0.74	0.77	0.77	1.29	1.42
time (sec)	N/A	0.015	0.003	0.043	0.413	0.573	0.477	0.111	0.701

Problem 10	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	46	46	44	41	42	43	39	44	58
normalized size	1	1.00	0.96	0.89	0.91	0.93	0.85	0.96	1.26
time (sec)	N/A	0.027	0.012	0.044	0.308	0.621	0.592	0.126	0.850

Problem 11	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	41	41	36	34	37	33	32	51	47
normalized size	1	1.00	0.88	0.83	0.90	0.80	0.78	1.24	1.15
time (sec)	N/A	0.018	0.003	0.044	0.413	0.702	0.749	0.115	0.704

Problem 12	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	104	104	79	102	95	78	104	0	85
normalized size	1	1.00	0.76	0.98	0.91	0.75	1.00	0.00	0.82
time (sec)	N/A	0.221	0.025	0.050	0.426	0.607	1.763	0.000	0.809

Problem 13	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	135	135	95	233	0	0	0	0	-1
normalized size	1	1.00	0.70	1.73	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.211	0.548	0.138	0.000	0.651	0.000	0.000	0.000

Problem 14	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	80	80	61	82	77	60	78	0	66
normalized size	1	1.00	0.76	1.02	0.96	0.75	0.98	0.00	0.82
time (sec)	N/A	0.146	0.021	0.051	0.415	0.644	1.035	0.000	0.204

Problem 15	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	111	111	76	213	0	0	0	0	-1
normalized size	1	1.00	0.68	1.92	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.140	0.295	0.132	0.000	0.628	0.000	0.000	0.000

Problem 16	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	53	53	42	61	57	40	54	0	44
normalized size	1	1.00	0.79	1.15	1.08	0.75	1.02	0.00	0.83
time (sec)	N/A	0.072	0.014	0.050	0.419	0.586	0.480	0.000	0.137

Problem 17	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F	F	B
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	67	67	56	136	0	0	0	0	55
normalized size	1	1.00	0.84	2.03	0.00	0.00	0.00	0.00	0.82
time (sec)	N/A	0.074	0.085	0.417	0.000	0.593	0.000	0.000	0.591

Problem 18	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	116	116	132	959	0	0	0	0	-1
normalized size	1	1.00	1.14	8.27	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.213	0.064	0.878	0.000	0.564	0.000	0.000	0.000

Problem 19	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-1)	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	66	66	64	234	0	0	0	0	-1
normalized size	1	1.00	0.97	3.55	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.105	0.049	0.136	0.000	0.556	0.000	0.000	0.000

Problem 20	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	59	59	56	68	56	57	53	60	50
normalized size	1	1.00	0.95	1.15	0.95	0.97	0.90	1.02	0.85
time (sec)	N/A	0.088	0.018	0.054	0.424	0.714	0.502	0.122	0.660

Problem 21	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-1)	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	113	113	96	290	0	0	0	0	-1
normalized size	1	1.00	0.85	2.57	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.161	0.250	0.143	0.000	0.678	0.000	0.000	0.000

Problem 22	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	89	89	81	91	95	78	80	91	73
normalized size	1	1.00	0.91	1.02	1.07	0.88	0.90	1.02	0.82
time (sec)	N/A	0.155	0.021	0.059	0.429	0.861	0.814	0.121	0.699

Problem 23	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-1)	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	194	194	125	243	0	0	0	0	-1
normalized size	1	1.00	0.64	1.25	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.667	0.687	1.878	0.000	0.975	0.000	0.000	0.000

Problem 24	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	205	205	184	2731	0	0	0	0	-1
normalized size	1	1.00	0.90	13.32	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.517	0.642	6.145	0.000	1.133	0.000	0.000	0.000

Problem 25	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-1)	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	148	148	96	209	0	0	0	0	-1
normalized size	1	1.00	0.65	1.41	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.386	0.380	1.553	0.000	0.549	0.000	0.000	0.000

Problem 26	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	157	157	149	1815	0	0	0	0	-1
normalized size	1	1.00	0.95	11.56	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.302	0.354	4.186	0.000	0.603	0.000	0.000	0.000

Problem 27	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-1)	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	103	103	76	162	0	0	0	0	-1
normalized size	1	1.00	0.74	1.57	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.171	0.101	0.729	0.000	0.700	0.000	0.000	0.000

Problem 28	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	96	96	90	199	0	0	0	0	-1
normalized size	1	1.00	0.94	2.07	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.150	0.116	0.447	0.000	0.540	0.000	0.000	0.000

Problem 29	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	178	178	180	1050	0	0	0	0	-1
normalized size	1	1.00	1.01	5.90	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.327	0.084	0.566	0.000	0.624	0.000	0.000	0.000

Problem 30	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F(-1)	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	93	93	83	1576	0	0	0	0	-1
normalized size	1	1.00	0.89	16.95	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.188	0.083	1.585	0.000	0.857	0.000	0.000	0.000

Problem 31	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-1)	F	F	A	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	105	105	90	109	0	0	0	29	-1
normalized size	1	1.00	0.86	1.04	0.00	0.00	0.00	0.28	-0.01
time (sec)	N/A	0.199	0.177	0.763	0.000	0.768	0.000	0.146	0.000

Problem 32	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F(-1)	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	167	167	151	5029	0	0	0	0	-1
normalized size	1	1.00	0.90	30.11	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.337	0.259	5.041	0.000	0.529	0.000	0.000	0.000

Problem 33	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-1)	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	152	152	126	158	0	0	0	0	-1
normalized size	1	1.00	0.83	1.04	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.420	0.283	1.591	0.000	0.726	0.000	0.000	0.000

Problem 34	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	13	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.08
time (sec)	N/A	0.013	0.935	1.836	0.000	0.546	0.000	0.000	0.000

Problem 35	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	13	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.08
time (sec)	N/A	0.013	0.931	1.351	0.000	0.578	0.000	0.000	0.000

Problem 36	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	57	57	52	0	0	0	0	0	-1
normalized size	1	1.00	0.91	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.020	0.024	1.655	0.000	0.622	0.000	0.000	0.000

Problem 37	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	40	40	32	38	35	31	34	0	32
normalized size	1	1.00	0.80	0.95	0.88	0.78	0.85	0.00	0.80
time (sec)	N/A	0.097	0.029	0.050	0.424	0.607	0.506	0.000	0.734

Problem 38	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	67	67	241	128	0	0	0	0	-1
normalized size	1	1.00	3.60	1.91	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.093	0.066	0.179	0.000	0.394	0.000	0.000	0.000

Problem 39	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	23	23	23	26	24	19	19	0	19
normalized size	1	1.00	1.00	1.13	1.04	0.83	0.83	0.00	0.83
time (sec)	N/A	0.048	0.016	0.049	0.433	0.559	0.296	0.000	0.636

Problem 40	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	48	48	221	114	0	0	0	0	-1
normalized size	1	1.00	4.60	2.38	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.054	0.051	0.131	0.000	0.633	0.000	0.000	0.000

Problem 41	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	8	8	8	7	6	6	7	8	6
normalized size	1	1.00	1.00	0.88	0.75	0.75	0.88	1.00	0.75
time (sec)	N/A	0.012	0.003	0.038	0.310	0.645	0.877	0.110	0.617

Problem 42	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	49	49	251	163	0	0	0	0	-1
normalized size	1	1.00	5.12	3.33	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.073	0.061	0.138	0.000	0.396	0.000	0.000	0.000

Problem 43	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	30	30	30	33	29	29	22	26	26
normalized size	1	1.00	1.00	1.10	0.97	0.97	0.73	0.87	0.87
time (sec)	N/A	0.056	0.015	0.054	0.420	1.018	0.433	0.113	0.092

Problem 44	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	72	72	280	180	0	0	0	0	-1
normalized size	1	1.00	3.89	2.50	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.115	0.067	0.109	0.000	1.505	0.000	0.000	0.000

Problem 45	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	47	47	47	43	55	47	42	39	35
normalized size	1	1.00	1.00	0.91	1.17	1.00	0.89	0.83	0.74
time (sec)	N/A	0.109	0.021	0.059	0.417	0.662	0.848	0.116	0.097

Problem 46	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	A	A	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	206	206	626	265	189	0	0	0	-1
normalized size	1	1.00	3.04	1.29	0.92	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.580	1.766	0.736	0.451	0.551	0.000	0.000	0.000

Problem 47	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	188	188	343	284	0	0	0	0	-1
normalized size	1	1.00	1.82	1.51	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.184	0.092	0.316	0.000	2.915	0.000	0.000	0.000

Problem 48	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	183	183	319	304	187	0	0	0	-1
normalized size	1	1.00	1.74	1.66	1.02	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.465	0.089	0.684	0.440	0.599	0.000	0.000	0.000

Problem 49	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	223	223	379	345	0	0	0	0	-1
normalized size	1	1.00	1.70	1.55	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.247	0.103	0.257	0.000	1.462	0.000	0.000	0.000

Problem 50	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	212	212	348	271	183	0	0	0	-1
normalized size	1	1.00	1.64	1.28	0.86	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.503	0.104	0.077	0.446	0.489	0.000	0.000	0.000

Problem 51	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	5	5	5	6	5	5	5	8	5
normalized size	1	1.00	1.00	1.20	1.00	1.00	1.00	1.60	1.00
time (sec)	N/A	0.020	0.025	0.036	0.324	0.464	0.243	0.123	0.589

Problem 52	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	13	13	13	14	13	13	17	15	13
normalized size	1	1.00	1.00	1.08	1.00	1.00	1.31	1.15	1.00
time (sec)	N/A	0.024	0.008	0.041	0.319	0.462	1.447	0.124	0.606

Problem 53	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	244	244	212	279	226	237	367	347	234
normalized size	1	1.00	0.87	1.14	0.93	0.97	1.50	1.42	0.96
time (sec)	N/A	0.176	0.190	0.041	0.321	0.491	4.359	0.146	0.217

Problem 54	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	168	168	149	191	159	167	243	252	190
normalized size	1	1.00	0.89	1.14	0.95	0.99	1.45	1.50	1.13
time (sec)	N/A	0.120	0.118	0.043	0.330	1.434	2.501	0.141	1.016

Problem 55	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	109	109	97	119	103	108	151	171	116
normalized size	1	1.00	0.89	1.09	0.94	0.99	1.39	1.57	1.06
time (sec)	N/A	0.127	0.076	0.041	0.314	1.523	1.361	0.143	0.844

Problem 56	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	58	58	67	60	53	57	73	99	62
normalized size	1	1.00	1.16	1.03	0.91	0.98	1.26	1.71	1.07
time (sec)	N/A	0.061	0.011	0.041	0.319	0.974	0.617	0.117	0.786

Problem 57	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	403	403	523	826	528	0	0	0	-1
normalized size	1	1.00	1.30	2.05	1.31	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.919	0.326	0.722	0.645	0.586	0.000	0.000	0.000

Problem 58	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	F	F(-1)	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	801	801	806	2177	628	0	0	0	-1
normalized size	1	1.00	1.01	2.72	0.78	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.158	8.256	0.803	0.546	0.694	0.000	0.000	0.000

Problem 59	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	F(-2)	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	19	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.05
time (sec)	N/A	0.019	6.844	1.395	0.000	0.590	0.000	0.000	0.000

Problem 60	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	19	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.05
time (sec)	N/A	0.022	4.234	1.294	0.000	0.957	0.000	0.000	0.000

Problem 61	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F(-2)	B	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	66	66	169	0	0	349	0	59	-1
normalized size	1	1.00	2.56	0.00	0.00	5.29	0.00	0.89	-0.02
time (sec)	N/A	0.094	0.266	1.201	0.000	1.467	0.000	0.170	0.000

Problem 62	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F(-2)	B	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	134	134	262	0	0	712	0	126	-1
normalized size	1	1.00	1.96	0.00	0.00	5.31	0.00	0.94	-0.01
time (sec)	N/A	0.326	0.731	1.201	0.000	1.157	0.000	0.156	0.000

Problem 63	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F(-2)	B	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	208	208	345	0	0	1278	0	208	-1
normalized size	1	1.00	1.66	0.00	0.00	6.14	0.00	1.00	-0.00
time (sec)	N/A	0.935	1.136	1.175	0.000	1.406	0.000	0.173	0.000

Problem 64	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F(-2)	B	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	293	293	450	0	0	1986	0	340	-1
normalized size	1	1.00	1.54	0.00	0.00	6.78	0.00	1.16	-0.00
time (sec)	N/A	1.155	1.674	1.199	0.000	1.589	0.000	0.179	0.000

Problem 65	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	195	195	136	117	0	0	0	0	-1
normalized size	1	1.00	0.70	0.60	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.072	1.247	1.073	0.000	1.642	0.000	0.000	0.000

Problem 66	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	155	155	89	99	0	0	0	0	-1
normalized size	1	1.00	0.57	0.64	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.045	0.116	0.919	0.000	0.575	0.000	0.000	0.000

Problem 67	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	35	35	21	68	31	29	0	33	-1
normalized size	1	1.00	0.60	1.94	0.89	0.83	0.00	0.94	-0.03
time (sec)	N/A	0.020	0.025	0.700	0.480	3.041	0.000	0.151	0.000

Problem 68	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	79	79	37	165	63	52	0	55	-1
normalized size	1	1.00	0.47	2.09	0.80	0.66	0.00	0.70	-0.01
time (sec)	N/A	0.044	0.035	0.750	0.450	0.538	0.000	0.149	0.000

Problem 69	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	118	118	47	258	93	70	0	83	-1
normalized size	1	1.00	0.40	2.19	0.79	0.59	0.00	0.70	-0.01
time (sec)	N/A	0.067	0.044	0.854	0.455	0.623	0.000	0.168	0.000

Problem 70	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	32	32	25	27	26	21	31	32	22
normalized size	1	1.00	0.78	0.84	0.81	0.66	0.97	1.00	0.69
time (sec)	N/A	0.026	0.022	0.043	0.447	0.675	0.497	0.133	0.073

Problem 71	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	44	44	36	37	39	39	88	40	27
normalized size	1	1.00	0.82	0.84	0.89	0.89	2.00	0.91	0.61
time (sec)	N/A	0.029	0.025	0.042	0.438	1.965	0.797	0.131	0.601

Problem 72	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F(-2)	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	34	34	28	35	38	26	0	0	22
normalized size	1	1.00	0.82	1.03	1.12	0.76	0.00	0.00	0.65
time (sec)	N/A	0.015	0.015	0.052	0.419	1.337	0.000	0.000	0.614

Problem 73	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	56	56	46	61	75	40	0	0	51
normalized size	1	1.00	0.82	1.09	1.34	0.71	0.00	0.00	0.91
time (sec)	N/A	0.044	0.027	0.349	0.430	0.655	0.000	0.000	0.062

Problem 74	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	41	41	41	36	38	39	39	40	35
normalized size	1	1.00	1.00	0.88	0.93	0.95	0.95	0.98	0.85
time (sec)	N/A	0.025	0.016	0.041	0.315	1.557	1.781	0.134	0.645

Problem 75	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	37	37	37	32	34	27	36	38	31
normalized size	1	1.00	1.00	0.86	0.92	0.73	0.97	1.03	0.84
time (sec)	N/A	0.019	0.006	0.039	0.417	0.737	1.033	0.112	0.612

Problem 76	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	31	31	31	28	28	28	31	47	27
normalized size	1	1.00	1.00	0.90	0.90	0.90	1.00	1.52	0.87
time (sec)	N/A	0.009	0.007	0.039	0.323	0.981	0.581	0.131	0.596

Problem 77	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	B	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	37	37	37	57	68	0	0	0	-1
normalized size	1	1.00	1.00	1.54	1.84	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.034	0.006	0.161	0.480	0.610	0.000	0.000	0.000

Problem 78	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	34	34	34	31	32	37	29	34	31
normalized size	1	1.00	1.00	0.91	0.94	1.09	0.85	1.00	0.91
time (sec)	N/A	0.017	0.007	0.045	0.317	0.677	0.696	0.123	0.660

Problem 79	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	35	35	38	30	27	28	29	29	32
normalized size	1	1.00	1.09	0.86	0.77	0.80	0.83	0.83	0.91
time (sec)	N/A	0.018	0.007	0.043	0.408	0.493	1.045	0.121	0.649

Problem 80	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	152	152	136	129	137	239	167	156	54
normalized size	1	1.00	0.89	0.85	0.90	1.57	1.10	1.03	0.36
time (sec)	N/A	0.104	0.050	0.061	0.406	0.558	30.121	0.147	0.443

Problem 81	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	150	150	133	127	135	228	156	153	52
normalized size	1	1.00	0.89	0.85	0.90	1.52	1.04	1.02	0.35
time (sec)	N/A	0.094	0.033	0.042	0.410	0.807	17.160	0.138	0.700

Problem 82	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	132	132	102	118	120	189	139	144	42
normalized size	1	1.00	0.77	0.89	0.91	1.43	1.05	1.09	0.32
time (sec)	N/A	0.076	0.038	0.040	0.413	0.620	9.454	0.136	0.129

Problem 83	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	135	135	105	115	123	227	144	135	44
normalized size	1	1.00	0.78	0.85	0.91	1.68	1.07	1.00	0.33
time (sec)	N/A	0.079	0.047	0.041	0.411	1.533	19.964	0.137	0.683

Problem 84	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	150	150	146	121	133	269	162	149	52
normalized size	1	1.00	0.97	0.81	0.89	1.79	1.08	0.99	0.35
time (sec)	N/A	0.092	0.056	0.045	0.415	1.044	37.993	0.130	0.715

Problem 85	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	51	51	40	32	31	27	39	33	31
normalized size	1	1.00	0.78	0.63	0.61	0.53	0.76	0.65	0.61
time (sec)	N/A	0.012	0.017	0.040	0.564	1.393	2.000	0.119	0.650

Problem 86	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	42	42	33	27	26	20	32	28	26
normalized size	1	1.00	0.79	0.64	0.62	0.48	0.76	0.67	0.62
time (sec)	N/A	0.009	0.013	0.039	0.416	0.626	1.295	0.144	0.659

Problem 87	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	22	22	22	17	16	12	19	14	16
normalized size	1	1.00	1.00	0.77	0.73	0.55	0.86	0.64	0.73
time (sec)	N/A	0.006	0.007	0.043	0.414	0.568	1.181	0.115	0.631

Problem 88	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	F	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	31	31	31	61	35	0	0	19	-1
normalized size	1	1.00	1.00	1.97	1.13	0.00	0.00	0.61	-0.03
time (sec)	N/A	0.032	0.006	0.057	0.453	0.613	0.000	0.152	0.000

Problem 89	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	23	23	29	18	17	19	92	19	17
normalized size	1	1.00	1.26	0.78	0.74	0.83	4.00	0.83	0.74
time (sec)	N/A	0.011	0.010	0.043	0.434	0.673	1.942	0.134	0.642

Problem 90	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	42	42	34	27	26	27	160	26	24
normalized size	1	1.00	0.81	0.64	0.62	0.64	3.81	0.62	0.57
time (sec)	N/A	0.012	0.011	0.046	0.412	0.527	4.946	0.121	0.646

Problem 91	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	36	36	29	25	24	24	85	39	24
normalized size	1	1.00	0.81	0.69	0.67	0.67	2.36	1.08	0.67
time (sec)	N/A	0.014	0.017	0.040	0.328	1.458	4.965	0.129	0.646

Problem 92	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	29	29	25	20	19	19	24	30	-1
normalized size	1	1.00	0.86	0.69	0.66	0.66	0.83	1.03	-0.03
time (sec)	N/A	0.011	0.011	0.040	0.315	1.126	1.274	0.119	0.000

Problem 93	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	18	18	18	15	14	14	17	18	14
normalized size	1	1.00	1.00	0.83	0.78	0.78	0.94	1.00	0.78
time (sec)	N/A	0.007	0.008	0.040	0.313	0.785	0.340	0.115	0.770

Problem 94	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	22	22	22	19	18	25	20	16	20
normalized size	1	1.00	1.00	0.86	0.82	1.14	0.91	0.73	0.91
time (sec)	N/A	0.008	0.013	0.044	0.330	2.095	1.183	0.135	0.665

Problem 95	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	37	37	29	26	25	33	143	23	27
normalized size	1	1.00	0.78	0.70	0.68	0.89	3.86	0.62	0.73
time (sec)	N/A	0.012	0.020	0.046	0.325	0.471	4.920	0.129	0.650

Problem 96	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	17	17	17	20	15	15	14	13	15
normalized size	1	1.00	1.00	1.18	0.88	0.88	0.82	0.76	0.88
time (sec)	N/A	0.006	0.002	0.068	0.332	0.482	0.152	0.122	0.056

Problem 97	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	47	47	40	94	0	63	0	0	-1
normalized size	1	1.00	0.85	2.00	0.00	1.34	0.00	0.00	-0.02
time (sec)	N/A	0.035	0.018	0.060	0.000	2.580	0.000	0.000	0.000

Problem 98	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	B	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	37	37	37	57	68	0	0	0	-1
normalized size	1	1.00	1.00	1.54	1.84	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.034	0.007	0.156	0.562	1.070	0.000	0.000	0.000

Problem 99	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	A	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	106	106	95	132	104	92	155	617	133
normalized size	1	1.00	0.90	1.25	0.98	0.87	1.46	5.82	1.25
time (sec)	N/A	0.107	0.077	0.044	0.431	0.700	1.453	0.981	0.775

Problem 100	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	A	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	80	80	114	94	85	73	117	423	101
normalized size	1	1.00	1.42	1.18	1.06	0.91	1.46	5.29	1.26
time (sec)	N/A	0.078	0.047	0.044	0.444	2.253	0.996	0.847	1.335

Problem 101	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	A	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	60	60	90	66	68	55	78	210	61
normalized size	1	1.00	1.50	1.10	1.13	0.92	1.30	3.50	1.02
time (sec)	N/A	0.055	0.038	0.041	0.429	1.055	0.613	0.272	0.973

Problem 102	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	33	33	44	36	29	43	46	111	42
normalized size	1	1.00	1.33	1.09	0.88	1.30	1.39	3.36	1.27
time (sec)	N/A	0.012	0.015	0.037	0.373	0.585	0.383	0.192	1.197

Problem 103	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	A	A	F	F(-1)	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	120	120	251	103	133	0	0	0	-1
normalized size	1	1.00	2.09	0.86	1.11	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.108	0.029	0.062	0.483	0.534	0.000	0.000	0.000

Problem 104	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	A	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	62	62	66	63	77	64	167	498	62
normalized size	1	1.00	1.06	1.02	1.24	1.03	2.69	8.03	1.00
time (sec)	N/A	0.039	0.067	0.048	0.425	0.520	1.771	0.367	1.222

Problem 105	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	A	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	95	95	92	104	112	99	381	1309	230
normalized size	1	1.00	0.97	1.09	1.18	1.04	4.01	13.78	2.42
time (sec)	N/A	0.082	0.112	0.049	0.422	0.744	2.831	0.712	1.386

Problem 106	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	A	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	129	129	126	164	165	142	760	3449	285
normalized size	1	1.00	0.98	1.27	1.28	1.10	5.89	26.74	2.21
time (sec)	N/A	0.112	0.155	0.053	0.417	0.587	4.506	2.612	1.240

Problem 107	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	F	F(-1)	F(-1)	F
verified	N/A	NO	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	642	655	563	2082	8519	0	0	0	-1
normalized size	1	1.02	0.88	3.24	13.27	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.998	0.602	1.390	5.978	1.500	0.000	0.000	0.000

Problem 108	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	A	B	F	F(-1)	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	152	152	345	198	283	0	0	0	-1
normalized size	1	1.00	2.27	1.30	1.86	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.142	0.047	0.064	0.550	2.520	0.000	0.000	0.000

Problem 109	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	F	F(-1)	F	F
verified	N/A	NO	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	338	422	602	317	280	0	0	0	-1
normalized size	1	1.25	1.78	0.94	0.83	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.498	11.124	0.069	0.554	1.686	0.000	0.000	0.000

Problem 110	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	C	B	F	F(-1)	F(-1)	F
verified	N/A	NO	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	735	818	5764	52954	8518	0	0	0	-1
normalized size	1	1.11	7.84	72.05	11.59	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.518	36.559	2.640	1.364	0.659	0.000	0.000	0.000

Problem 111	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	693	693	618	343	0	0	0	0	-1
normalized size	1	1.00	0.89	0.49	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	2.065	0.807	0.286	0.000	0.565	0.000	0.000	0.000

Problem 112	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	830	830	809	376	0	0	0	0	-1
normalized size	1	1.00	0.97	0.45	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	2.322	0.740	0.291	0.000	0.648	0.000	0.000	0.000

Problem 113	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	F	F(-1)	F(-1)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	367	367	629	4601	0	0	0	0	-1
normalized size	1	1.00	1.71	12.54	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.686	0.495	1.602	0.000	0.642	0.000	0.000	0.000

Problem 114	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	132	132	127	125	0	0	0	0	-1
normalized size	1	1.00	0.96	0.95	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.096	0.160	0.691	0.000	0.626	0.000	0.000	0.000

Problem 115	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	216	216	138	156	0	0	0	0	-1
normalized size	1	1.00	0.64	0.72	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.168	0.092	1.022	0.000	0.607	0.000	0.000	0.000

Problem 116	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	23	0	177	0	0	0	0	0	-1
normalized size	1	0.00	7.70	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.040	0.410	1.375	0.000	1.413	0.000	0.000	0.000

Problem 117	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	25	0	180	0	0	0	0	0	-1
normalized size	1	0.00	7.20	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.053	0.112	1.296	0.000	2.422	0.000	0.000	0.000

Problem 118	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	187	187	202	167	0	0	0	0	-1
normalized size	1	1.00	1.08	0.89	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.223	1.546	2.629	0.000	2.103	0.000	0.000	0.000

Problem 119	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	281	281	207	202	0	0	0	0	-1
normalized size	1	1.00	0.74	0.72	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.349	0.928	3.993	0.000	1.095	0.000	0.000	0.000

Problem 120	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	30	0	198	0	0	0	0	0	-1
normalized size	1	0.00	6.60	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.137	1.003	3.488	0.000	0.572	0.000	0.000	0.000

Problem 121	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	32	0	200	0	0	0	0	0	-1
normalized size	1	0.00	6.25	0.00	0.00	0.00	0.00	0.00	-0.03
time (sec)	N/A	0.190	0.225	3.471	0.000	0.673	0.000	0.000	0.000

Problem 122	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	52	52	42	86	93	81	99	203	85
normalized size	1	1.00	0.81	1.65	1.79	1.56	1.90	3.90	1.63
time (sec)	N/A	0.039	0.015	0.043	0.432	0.554	2.910	0.308	0.153

Problem 123	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	A	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	39	39	141	57	52	33	56	100	49
normalized size	1	1.00	3.62	1.46	1.33	0.85	1.44	2.56	1.26
time (sec)	N/A	0.021	0.059	0.041	0.425	0.518	1.774	0.179	1.510

Problem 124	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	F	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	45	45	38	98	112	0	0	100	-1
normalized size	1	1.00	0.84	2.18	2.49	0.00	0.00	2.22	-0.02
time (sec)	N/A	0.041	0.008	0.061	0.480	0.615	0.000	0.550	0.000

Problem 125	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	47	47	40	46	53	59	151	238	57
normalized size	1	1.00	0.85	0.98	1.13	1.26	3.21	5.06	1.21
time (sec)	N/A	0.032	0.021	0.047	0.320	0.558	6.137	0.173	0.774

Problem 126	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	F	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	35	35	35	68	64	0	0	26	-1
normalized size	1	1.00	1.00	1.94	1.83	0.00	0.00	0.74	-0.03
time (sec)	N/A	0.037	0.005	0.059	0.458	2.081	0.000	0.159	0.000

Problem 127	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	F	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	45	45	38	98	122	0	0	103	-1
normalized size	1	1.00	0.84	2.18	2.71	0.00	0.00	2.29	-0.02
time (sec)	N/A	0.046	0.008	0.059	0.480	1.729	0.000	0.688	0.000

Problem 128	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	F(-2)	F(-2)	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	21	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.05
time (sec)	N/A	0.018	9.258	3.411	0.000	0.000	0.000	0.000	0.000

Problem 129	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	A	A	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	233	233	157	526	341	325	654	2272	783
normalized size	1	1.00	0.67	2.26	1.46	1.39	2.81	9.75	3.36
time (sec)	N/A	0.357	0.291	0.051	0.449	1.937	26.449	2.762	1.194

Problem 130	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	A	A	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	154	154	118	312	216	206	376	1169	409
normalized size	1	1.00	0.77	2.03	1.40	1.34	2.44	7.59	2.66
time (sec)	N/A	0.186	0.158	0.049	0.426	0.735	11.141	1.880	0.956

Problem 131	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	A	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	97	97	163	146	113	110	177	452	136
normalized size	1	1.00	1.68	1.51	1.16	1.13	1.82	4.66	1.40
time (sec)	N/A	0.114	0.094	0.045	0.426	0.520	4.758	0.342	1.453

Problem 132	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	38	38	49	42	34	52	51	116	48
normalized size	1	1.00	1.29	1.11	0.89	1.37	1.34	3.05	1.26
time (sec)	N/A	0.020	0.014	0.039	0.310	0.694	0.387	0.215	1.285

Problem 133	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F(-1)	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	162	162	304	224	0	0	0	0	-1
normalized size	1	1.00	1.88	1.38	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.149	0.109	0.067	0.000	0.525	0.000	0.000	0.000

Problem 134	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	A	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	153	153	118	206	177	223	0	1278	128
normalized size	1	1.00	0.77	1.35	1.16	1.46	0.00	8.35	0.84
time (sec)	N/A	0.111	0.199	0.050	0.441	1.125	0.000	0.867	2.084

Problem 135	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	228	228	180	437	410	728	0	6190	399
normalized size	1	1.00	0.79	1.92	1.80	3.19	0.00	27.15	1.75
time (sec)	N/A	0.278	0.619	0.053	0.452	3.215	0.000	4.698	7.329

Problem 136	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	382	382	665	1832	0	0	0	0	-1
normalized size	1	1.00	1.74	4.80	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.582	5.370	0.196	0.000	0.623	0.000	0.000	0.000

Problem 137	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	220	220	286	766	0	0	0	0	-1
normalized size	1	1.00	1.30	3.48	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.384	0.585	0.147	0.000	0.541	0.000	0.000	0.000

Problem 138	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F	F	B
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	102	102	118	236	0	0	0	0	123
normalized size	1	1.00	1.16	2.31	0.00	0.00	0.00	0.00	1.21
time (sec)	N/A	0.116	0.170	0.334	0.000	0.624	0.000	0.000	0.966

Problem 139	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	F	C	F	F	F(-1)	F(-1)	F
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	261	261	0	2201	0	0	0	0	-1
normalized size	1	1.00	0.00	8.43	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.177	7.037	2.530	0.000	0.667	0.000	0.000	0.000

Problem 140	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F(-1)	F(-1)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	567	567	454	1180	0	0	0	0	-1
normalized size	1	1.00	0.80	2.08	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.386	9.504	0.126	0.000	0.833	0.000	0.000	0.000

Problem 141	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	565	565	2336	3693	0	0	0	0	-1
normalized size	1	1.00	4.13	6.54	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.963	11.429	0.577	0.000	0.588	0.000	0.000	0.000

Problem 142	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	337	337	630	1570	0	0	0	0	-1
normalized size	1	1.00	1.87	4.66	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.664	1.270	1.201	0.000	0.591	0.000	0.000	0.000

Problem 143	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	143	143	228	507	0	0	0	0	-1
normalized size	1	1.00	1.59	3.55	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.217	0.352	0.453	0.000	0.727	0.000	0.000	0.000

Problem 144	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	F	C	F	F	F(-1)	F(-1)	F
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	372	372	0	4521	0	0	0	0	-1
normalized size	1	1.00	0.00	12.15	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.216	45.863	1.049	0.000	0.477	0.000	0.000	0.000

Problem 145	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F(-1)	F(-2)	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	1233	1233	1584	1579	0	0	0	0	-1
normalized size	1	1.00	1.28	1.28	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	2.254	38.759	0.873	0.000	0.726	0.000	0.000	0.000

Problem 146	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	177	177	162	0	0	0	0	0	-1
normalized size	1	1.00	0.92	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.244	0.360	2.106	0.000	0.581	0.000	0.000	0.000

Problem 147	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	23	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.061	5.441	1.886	0.000	0.774	0.000	0.000	0.000

Problem 148	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	23	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.060	0.485	2.039	0.000	0.540	0.000	0.000	0.000

Problem 149	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	42	42	37	46	35	51	60	127	230
normalized size	1	1.00	0.88	1.10	0.83	1.21	1.43	3.02	5.48
time (sec)	N/A	0.044	0.016	0.041	0.319	0.679	3.339	0.230	0.763

Problem 150	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	45	45	40	149	38	56	0	60	58
normalized size	1	1.00	0.89	3.31	0.84	1.24	0.00	1.33	1.29
time (sec)	N/A	0.044	0.036	0.439	0.317	0.608	0.000	0.377	1.377

Problem 151	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	43	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.046	0.091	1.835	0.000	0.621	0.000	0.000	0.000

Problem 152	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	F	B	F	F	F(-1)	F	F
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	488	488	0	1605	0	0	0	0	-1
normalized size	1	1.00	0.00	3.29	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.523	0.296	2.361	0.000	0.544	0.000	0.000	0.000

Problem 153	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	F	B	F	F	F(-1)	F	F
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	321	321	0	823	0	0	0	0	-1
normalized size	1	1.00	0.00	2.56	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.320	0.521	1.647	0.000	0.608	0.000	0.000	0.000

Problem 154	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	98	98	93	259	0	0	0	0	-1
normalized size	1	1.00	0.95	2.64	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.069	0.035	0.972	0.000	0.603	0.000	0.000	0.000

Problem 155	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	43	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.046	0.091	1.382	0.000	0.734	0.000	0.000	0.000

Problem 156	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	43	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.042	0.818	1.347	0.000	0.737	0.000	0.000	0.000

Problem 157	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	16	16	18	20	17	15	48	30	21
normalized size	1	1.00	1.12	1.25	1.06	0.94	3.00	1.88	1.31
time (sec)	N/A	0.008	0.009	0.039	0.315	0.683	0.137	0.207	0.077

Problem 158	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	C	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	403	403	363	8034	0	1973	0	0	-1
normalized size	1	1.00	0.90	19.94	0.00	4.90	0.00	0.00	-0.00
time (sec)	N/A	0.512	0.891	64.667	0.000	0.806	0.000	0.000	0.000

Problem 159	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	C	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	305	305	272	7654	0	1557	0	0	-1
normalized size	1	1.00	0.89	25.10	0.00	5.10	0.00	0.00	-0.00
time (sec)	N/A	0.406	0.617	6.339	0.000	0.851	0.000	0.000	0.000

Problem 160	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	B	B	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	198	198	555	1142	433	1117	0	0	-1
normalized size	1	1.00	2.80	5.77	2.19	5.64	0.00	0.00	-0.01
time (sec)	N/A	0.243	1.763	1.018	0.537	1.113	0.000	0.000	0.000

Problem 161	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	F(-1)	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	18	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.06
time (sec)	N/A	0.075	0.413	1.189	0.000	0.496	0.000	0.000	0.000

Problem 162	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	B	C	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	154	154	136	1526	309	319	0	0	-1
normalized size	1	1.00	0.88	9.91	2.01	2.07	0.00	0.00	-0.01
time (sec)	N/A	0.253	0.261	6.488	0.368	0.592	0.000	0.000	0.000

Problem 163	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	B	C	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	123	123	110	1491	218	268	0	0	-1
normalized size	1	1.00	0.89	12.12	1.77	2.18	0.00	0.00	-0.01
time (sec)	N/A	0.220	0.109	5.678	0.345	0.721	0.000	0.000	0.000

Problem 164	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	B	B	F(-2)	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	85	85	967	1489	455	199	0	0	-1
normalized size	1	1.00	11.38	17.52	5.35	2.34	0.00	0.00	-0.01
time (sec)	N/A	0.132	5.584	0.611	0.454	0.682	0.000	0.000	0.000

Problem 165	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	F(-2)	A	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	24	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.104	0.357	1.857	0.000	0.772	0.000	0.000	0.000

Problem 166	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	B	C	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	155	155	141	1527	312	321	0	0	-1
normalized size	1	1.00	0.91	9.85	2.01	2.07	0.00	0.00	-0.01
time (sec)	N/A	0.261	0.255	6.513	0.367	0.724	0.000	0.000	0.000

Problem 167	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	B	C	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	124	124	111	1492	221	270	0	0	-1
normalized size	1	1.00	0.90	12.03	1.78	2.18	0.00	0.00	-0.01
time (sec)	N/A	0.239	0.097	6.079	0.368	0.619	0.000	0.000	0.000

Problem 168	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	B	B	F(-2)	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	86	86	847	1681	450	201	0	0	-1
normalized size	1	1.00	9.85	19.55	5.23	2.34	0.00	0.00	-0.01
time (sec)	N/A	0.142	2.978	0.613	0.466	0.578	0.000	0.000	0.000

Problem 169	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	F(-2)	A	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	25	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.164	0.835	1.828	0.000	0.581	0.000	0.000	0.000

Problem 170	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	16	16	18	45	10	10	19	10	16
normalized size	1	1.00	1.12	2.81	0.62	0.62	1.19	0.62	1.00
time (sec)	N/A	0.013	0.009	0.049	0.322	0.631	0.124	0.123	0.637

Problem 171	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	C	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	399	399	359	7900	0	1585	0	0	-1
normalized size	1	1.00	0.90	19.80	0.00	3.97	0.00	0.00	-0.00
time (sec)	N/A	0.508	0.909	75.343	0.000	0.888	0.000	0.000	0.000

Problem 172	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	C	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	303	303	270	7532	0	1285	0	0	-1
normalized size	1	1.00	0.89	24.86	0.00	4.24	0.00	0.00	-0.00
time (sec)	N/A	0.417	0.596	6.576	0.000	1.076	0.000	0.000	0.000

Problem 173	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	B	B	F(-1)	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	198	198	1649	1160	532	961	0	0	-1
normalized size	1	1.00	8.33	5.86	2.69	4.85	0.00	0.00	-0.01
time (sec)	N/A	0.254	13.048	1.216	0.541	0.978	0.000	0.000	0.000

Problem 174	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	F(-1)	A	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	18	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.06
time (sec)	N/A	0.118	0.422	1.529	0.000	0.518	0.000	0.000	0.000

Problem 175	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F(-2)	C	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	154	154	140	1526	0	174	0	0	-1
normalized size	1	1.00	0.91	9.91	0.00	1.13	0.00	0.00	-0.01
time (sec)	N/A	0.266	0.233	7.077	0.000	0.723	0.000	0.000	0.000

Problem 176	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F(-2)	C	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	123	123	110	1491	0	152	0	0	-1
normalized size	1	1.00	0.89	12.12	0.00	1.24	0.00	0.00	-0.01
time (sec)	N/A	0.224	0.113	6.119	0.000	0.426	0.000	0.000	0.000

Problem 177	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	F(-2)	A	F(-2)	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	85	85	929	1498	0	116	0	0	-1
normalized size	1	1.00	10.93	17.62	0.00	1.36	0.00	0.00	-0.01
time (sec)	N/A	0.136	6.883	0.752	0.000	0.412	0.000	0.000	0.000

Problem 178	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	F(-2)	A	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	24	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.114	0.414	2.070	0.000	0.527	0.000	0.000	0.000

Problem 179	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F(-2)	C	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	155	155	136	1527	0	173	0	0	-1
normalized size	1	1.00	0.88	9.85	0.00	1.12	0.00	0.00	-0.01
time (sec)	N/A	0.257	0.230	6.796	0.000	0.812	0.000	0.000	0.000

Problem 180	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F(-2)	C	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	124	124	110	1492	0	151	0	0	-1
normalized size	1	1.00	0.89	12.03	0.00	1.22	0.00	0.00	-0.01
time (sec)	N/A	0.219	0.134	6.073	0.000	0.690	0.000	0.000	0.000

Problem 181	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	F(-2)	A	F(-2)	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	86	86	872	1756	0	115	0	0	-1
normalized size	1	1.00	10.14	20.42	0.00	1.34	0.00	0.00	-0.01
time (sec)	N/A	0.132	2.844	0.762	0.000	0.819	0.000	0.000	0.000

Problem 182	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	F(-2)	A	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	25	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.117	0.413	2.306	0.000	0.508	0.000	0.000	0.000

Problem 183	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	C	F	C	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	299	299	600	7275	0	1448	0	0	-1
normalized size	1	1.00	2.01	24.33	0.00	4.84	0.00	0.00	-0.00
time (sec)	N/A	0.208	0.362	48.500	0.000	0.971	0.000	0.000	0.000

Problem 184	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	C	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	229	229	375	5425	0	994	0	0	-1
normalized size	1	1.00	1.64	23.69	0.00	4.34	0.00	0.00	-0.00
time (sec)	N/A	0.154	0.208	40.635	0.000	0.780	0.000	0.000	0.000

Problem 185	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	C	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	159	159	278	2688	0	596	0	0	-1
normalized size	1	1.00	1.75	16.91	0.00	3.75	0.00	0.00	-0.01
time (sec)	N/A	0.102	0.240	5.128	0.000	0.835	0.000	0.000	0.000

Problem 186	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	B	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	73	73	132	198	0	334	0	0	-1
normalized size	1	1.00	1.81	2.71	0.00	4.58	0.00	0.00	-0.01
time (sec)	N/A	0.041	0.057	0.621	0.000	0.599	0.000	0.000	0.000

Problem 187	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	A	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	18	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.06
time (sec)	N/A	0.040	4.307	2.679	0.000	0.773	0.000	0.000	0.000

Problem 188	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	C	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	355	355	305	6930	0	1335	0	0	-1
normalized size	1	1.00	0.86	19.52	0.00	3.76	0.00	0.00	-0.00
time (sec)	N/A	0.455	5.456	60.451	0.000	0.723	0.000	0.000	0.000

Problem 189	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	C	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	267	267	229	6580	0	1103	0	0	-1
normalized size	1	1.00	0.86	24.64	0.00	4.13	0.00	0.00	-0.00
time (sec)	N/A	0.376	4.196	6.450	0.000	0.710	0.000	0.000	0.000

Problem 190	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	B	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	174	174	288	350	0	851	0	0	-1
normalized size	1	1.00	1.66	2.01	0.00	4.89	0.00	0.00	-0.01
time (sec)	N/A	0.222	1.511	0.384	0.000	1.651	0.000	0.000	0.000

Problem 191	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	18	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.06
time (sec)	N/A	0.081	9.511	1.366	0.000	0.585	0.000	0.000	0.000

Problem 192	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	C	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	142	142	128	1549	129	290	0	0	-1
normalized size	1	1.00	0.90	10.91	0.91	2.04	0.00	0.00	-0.01
time (sec)	N/A	0.228	0.221	6.272	2.100	0.840	0.000	0.000	0.000

Problem 193	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	C	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	113	113	102	1513	107	244	0	0	-1
normalized size	1	1.00	0.90	13.39	0.95	2.16	0.00	0.00	-0.01
time (sec)	N/A	0.197	0.089	5.457	2.019	0.425	0.000	0.000	0.000

Problem 194	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	B	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	79	79	71	1381	80	186	0	0	-1
normalized size	1	1.00	0.90	17.48	1.01	2.35	0.00	0.00	-0.01
time (sec)	N/A	0.120	0.874	0.673	1.989	0.582	0.000	0.000	0.000

Problem 195	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	22	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.05
time (sec)	N/A	0.093	3.481	1.854	0.000	0.648	0.000	0.000	0.000

Problem 196	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	C	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	145	145	128	1570	129	290	0	0	-1
normalized size	1	1.00	0.88	10.83	0.89	2.00	0.00	0.00	-0.01
time (sec)	N/A	0.227	0.231	6.237	2.003	0.654	0.000	0.000	0.000

Problem 197	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	C	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	116	116	102	1534	106	244	0	0	-1
normalized size	1	1.00	0.88	13.22	0.91	2.10	0.00	0.00	-0.01
time (sec)	N/A	0.194	0.118	5.437	2.015	0.658	0.000	0.000	0.000

Problem 198	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	B	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	82	82	71	1351	80	186	0	0	-1
normalized size	1	1.00	0.87	16.48	0.98	2.27	0.00	0.00	-0.01
time (sec)	N/A	0.119	0.776	0.551	2.006	0.739	0.000	0.000	0.000

Problem 199	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	25	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.089	3.470	1.938	0.000	0.745	0.000	0.000	0.000

Problem 200	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	C	F	C	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	299	299	600	7275	0	1448	0	0	-1
normalized size	1	1.00	2.01	24.33	0.00	4.84	0.00	0.00	-0.00
time (sec)	N/A	0.208	0.371	51.065	0.000	0.753	0.000	0.000	0.000

Problem 201	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	C	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	229	229	375	5425	0	994	0	0	-1
normalized size	1	1.00	1.64	23.69	0.00	4.34	0.00	0.00	-0.00
time (sec)	N/A	0.154	0.218	41.302	0.000	0.837	0.000	0.000	0.000

Problem 202	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	C	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	159	159	278	2688	0	596	0	0	-1
normalized size	1	1.00	1.75	16.91	0.00	3.75	0.00	0.00	-0.01
time (sec)	N/A	0.099	0.278	5.092	0.000	0.822	0.000	0.000	0.000

Problem 203	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	B	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	74	74	132	198	0	334	0	0	-1
normalized size	1	1.00	1.78	2.68	0.00	4.51	0.00	0.00	-0.01
time (sec)	N/A	0.043	0.050	0.589	0.000	0.829	0.000	0.000	0.000

Problem 204	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	18	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.06
time (sec)	N/A	0.037	0.845	2.661	0.000	0.625	0.000	0.000	0.000

Problem 205	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	C	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	351	351	299	6858	0	1315	0	0	-1
normalized size	1	1.00	0.85	19.54	0.00	3.75	0.00	0.00	-0.00
time (sec)	N/A	0.463	5.770	60.217	0.000	1.179	0.000	0.000	0.000

Problem 206	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	C	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	265	265	225	6508	0	1087	0	0	-1
normalized size	1	1.00	0.85	24.56	0.00	4.10	0.00	0.00	-0.00
time (sec)	N/A	0.376	4.513	6.464	0.000	1.082	0.000	0.000	0.000

Problem 207	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	B	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	174	174	287	350	0	839	0	0	-1
normalized size	1	1.00	1.65	2.01	0.00	4.82	0.00	0.00	-0.01
time (sec)	N/A	0.232	1.310	0.583	0.000	1.414	0.000	0.000	0.000

Problem 208	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	18	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.06
time (sec)	N/A	0.079	9.316	1.577	0.000	0.580	0.000	0.000	0.000

Problem 209	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	C	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	142	142	128	1548	129	290	0	0	-1
normalized size	1	1.00	0.90	10.90	0.91	2.04	0.00	0.00	-0.01
time (sec)	N/A	0.231	0.219	5.939	2.010	0.807	0.000	0.000	0.000

Problem 210	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	C	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	113	113	102	1512	107	244	0	0	-1
normalized size	1	1.00	0.90	13.38	0.95	2.16	0.00	0.00	-0.01
time (sec)	N/A	0.203	0.096	5.653	1.977	0.845	0.000	0.000	0.000

Problem 211	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	B	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	79	79	71	1381	80	186	0	0	-1
normalized size	1	1.00	0.90	17.48	1.01	2.35	0.00	0.00	-0.01
time (sec)	N/A	0.124	0.714	0.753	2.008	0.698	0.000	0.000	0.000

Problem 212	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	22	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.05
time (sec)	N/A	0.083	3.416	2.151	0.000	0.672	0.000	0.000	0.000

Problem 213	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	C	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	145	145	128	1571	129	290	0	0	-1
normalized size	1	1.00	0.88	10.83	0.89	2.00	0.00	0.00	-0.01
time (sec)	N/A	0.232	0.235	6.096	2.012	0.608	0.000	0.000	0.000

Problem 214	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	C	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	116	116	102	1535	106	244	0	0	-1
normalized size	1	1.00	0.88	13.23	0.91	2.10	0.00	0.00	-0.01
time (sec)	N/A	0.205	0.122	5.786	2.006	0.671	0.000	0.000	0.000

Problem 215	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	B	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	82	82	71	1351	80	186	0	0	-1
normalized size	1	1.00	0.87	16.48	0.98	2.27	0.00	0.00	-0.01
time (sec)	N/A	0.124	0.716	0.617	2.032	0.722	0.000	0.000	0.000

Problem 216	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	N/A	A	A	A	A	A	F(-1)	A	A
verified	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	25	0	0	0	0	0	0	0	-1
normalized size	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
time (sec)	N/A	0.108	3.563	2.087	0.000	0.717	0.000	0.000	0.000

Problem 217	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	C	F	C	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	187	187	132	1058	0	246	0	0	-1
normalized size	1	1.00	0.71	5.66	0.00	1.32	0.00	0.00	-0.01
time (sec)	N/A	0.608	0.364	0.574	0.000	0.821	0.000	0.000	0.000

Problem 218	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	B	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	35	35	59	59	34	40	0	0	-1
normalized size	1	1.00	1.69	1.69	0.97	1.14	0.00	0.00	-0.03
time (sec)	N/A	0.028	0.081	0.059	0.455	0.494	0.000	0.000	0.000

Problem 219	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	C	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	71	71	58	50	0	65	0	0	-1
normalized size	1	1.00	0.82	0.70	0.00	0.92	0.00	0.00	-0.01
time (sec)	N/A	0.047	0.012	0.269	0.000	0.674	0.000	0.000	0.000

Problem 220	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	C	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	103	103	103	76	0	87	0	0	-1
normalized size	1	1.00	1.00	0.74	0.00	0.84	0.00	0.00	-0.01
time (sec)	N/A	0.070	0.009	0.235	0.000	0.575	0.000	0.000	0.000

Problem 221	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	B	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	51	51	83	106	63	103	0	0	-1
normalized size	1	1.00	1.63	2.08	1.24	2.02	0.00	0.00	-0.02
time (sec)	N/A	0.030	0.180	0.059	0.463	0.749	0.000	0.000	0.000

Problem 222	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	C	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	103	103	83	355	0	151	0	0	-1
normalized size	1	1.00	0.81	3.45	0.00	1.47	0.00	0.00	-0.01
time (sec)	N/A	0.062	0.016	0.345	0.000	0.659	0.000	0.000	0.000

Problem 223	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	C	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	151	151	151	413	0	187	0	0	-1
normalized size	1	1.00	1.00	2.74	0.00	1.24	0.00	0.00	-0.01
time (sec)	N/A	0.098	0.010	0.341	0.000	0.816	0.000	0.000	0.000

Problem 224	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	196	196	167	186	189	212	0	0	-1
normalized size	1	1.00	0.85	0.95	0.96	1.08	0.00	0.00	-0.01
time (sec)	N/A	0.154	0.187	0.063	0.514	1.526	0.000	0.000	0.000

Problem 225	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	C	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	250	250	250	678	0	304	0	0	-1
normalized size	1	1.00	1.00	2.71	0.00	1.22	0.00	0.00	-0.00
time (sec)	N/A	2.654	0.307	0.484	0.000	0.695	0.000	0.000	0.000

Problem 226	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	C	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	313	313	313	764	0	378	0	0	-1
normalized size	1	1.00	1.00	2.44	0.00	1.21	0.00	0.00	-0.00
time (sec)	N/A	2.448	0.238	0.482	0.000	0.794	0.000	0.000	0.000

Problem 227	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	27	27	27	25	19	28	19	21	22
normalized size	1	1.00	1.00	0.93	0.70	1.04	0.70	0.78	0.81
time (sec)	N/A	0.020	0.023	0.044	0.337	0.521	6.092	0.123	0.093

Problem 228	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	17	17	17	19	17	15	12	18	15
normalized size	1	1.00	1.00	1.12	1.00	0.88	0.71	1.06	0.88
time (sec)	N/A	0.040	0.049	0.101	0.356	0.643	0.527	0.108	0.127

Problem 229	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	B	F(-1)	A	B
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	47	47	61	1281	47	131	0	66	65
normalized size	1	1.00	1.30	27.26	1.00	2.79	0.00	1.40	1.38
time (sec)	N/A	0.074	0.112	0.516	0.441	0.625	0.000	0.127	0.730

Problem 230	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	C	A	B	F(-1)	A	B
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	103	103	146	1358	131	276	0	154	133
normalized size	1	1.00	1.42	13.18	1.27	2.68	0.00	1.50	1.29
time (sec)	N/A	0.139	0.152	0.725	0.451	0.673	0.000	0.136	0.855

Problem 231	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	C	A	B	F(-1)	F	B
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	180	180	89	1323	167	431	0	0	164
normalized size	1	1.00	0.49	7.35	0.93	2.39	0.00	0.00	0.91
time (sec)	N/A	0.178	0.120	1.737	0.432	0.710	0.000	0.000	2.564

Problem 232	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	C	A	B	F	F	B
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	180	180	89	1323	167	431	0	0	164
normalized size	1	1.00	0.49	7.35	0.93	2.39	0.00	0.00	0.91
time (sec)	N/A	0.180	0.120	1.475	0.445	0.680	0.000	0.000	2.372

Problem 233	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	C	A	B	F(-1)	A	B
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	103	103	145	859	169	221	0	154	135
normalized size	1	1.00	1.41	8.34	1.64	2.15	0.00	1.50	1.31
time (sec)	N/A	0.151	0.156	0.762	0.483	0.445	0.000	0.127	0.835

Problem 234	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	A	F	A	B
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	48	48	59	903	48	75	0	65	68
normalized size	1	1.00	1.23	18.81	1.00	1.56	0.00	1.35	1.42
time (sec)	N/A	0.077	0.102	0.595	0.436	0.625	0.000	0.128	0.706

2.3 Detailed conclusion table specific for Rubi results

The following table is specific to Rubi. It gives additional statistics for each integral. the column **steps** is the number of steps used by Rubi to obtain the antiderivative. The **rules** column is the number of unique rules used. The **integrand size** column is the leaf size of the integrand. Finally the ratio $\frac{\text{number of rules}}{\text{integrand size}}$ is given. The larger this ratio is, the harder the integral was to solve. In this test, problem number [50] had the largest ratio of [1.267]

Table 2.1: Rubi specific breakdown of results for each integral

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
1	A	4	3	1.00	8	0.375
2	A	4	3	1.00	8	0.375
3	A	4	3	1.00	8	0.375
4	A	4	3	1.00	8	0.375
5	A	3	3	1.00	6	0.500
6	A	2	2	1.00	4	0.500
7	A	3	2	1.00	8	0.250
8	A	5	5	1.00	8	0.625
9	A	3	3	1.00	8	0.375
10	A	4	3	1.00	8	0.375
11	A	4	3	1.00	8	0.375
12	A	15	7	1.00	10	0.700
13	A	14	9	1.00	10	0.900
14	A	10	7	1.00	10	0.700
15	A	9	8	1.00	10	0.800
16	A	5	5	1.00	8	0.625
17	A	5	5	1.00	6	0.833
18	A	6	5	1.00	10	0.500
19	A	4	4	1.00	10	0.400
20	A	8	7	1.00	10	0.700

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	number of rules / integrand leaf size
21	A	8	7	1.00	10	0.700
22	A	13	8	1.00	10	0.800
23	A	33	11	1.00	10	1.100
24	A	22	11	1.00	10	1.100
25	A	18	10	1.00	10	1.000
26	A	11	9	1.00	10	0.900
27	A	8	8	1.00	8	1.000
28	A	5	6	1.00	6	1.000
29	A	8	6	1.00	10	0.600
30	A	5	6	1.00	10	0.600
31	A	7	6	1.00	10	0.600
32	A	14	11	1.00	10	1.100
33	A	16	8	1.00	10	0.800
34	A	0	0	0.00	0	0.000
35	A	0	0	0.00	0	0.000
36	A	2	2	1.00	8	0.250
37	A	9	7	1.00	13	0.538
38	A	8	8	1.00	13	0.615
39	A	4	4	1.00	13	0.308
40	A	4	4	1.00	11	0.364
41	A	1	1	1.00	10	0.100
42	A	3	3	1.00	13	0.231
43	A	7	7	1.00	13	0.538
44	A	7	7	1.00	13	0.538
45	A	12	8	1.00	13	0.615
46	A	28	15	1.00	15	1.000
47	A	10	5	1.00	13	0.385
48	A	25	13	1.00	12	1.083
49	A	15	7	1.00	15	0.467
50	A	31	19	1.00	15	1.267
51	A	1	1	1.00	12	0.083
52	A	1	1	1.00	12	0.083
53	A	4	4	1.00	14	0.286
54	A	4	4	1.00	14	0.286
55	A	5	5	1.00	14	0.357
56	A	5	4	1.00	12	0.333

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
57	A	27	13	1.00	14	0.929
58	A	24	12	1.00	14	0.857
59	A	0	0	0.00	0	0.000
60	A	0	0	0.00	0	0.000
61	A	5	6	1.00	16	0.375
62	A	7	9	1.00	16	0.562
63	A	8	9	1.00	16	0.562
64	A	8	9	1.00	16	0.562
65	A	3	3	1.00	14	0.214
66	A	2	2	1.00	14	0.143
67	A	1	1	1.00	14	0.071
68	A	2	2	1.00	14	0.143
69	A	3	2	1.00	14	0.143
70	A	3	3	1.00	11	0.273
71	A	4	3	1.00	11	0.273
72	A	2	2	1.00	10	0.200
73	A	4	4	1.00	12	0.333
74	A	4	3	1.00	10	0.300
75	A	4	4	1.00	10	0.400
76	A	2	2	1.00	8	0.250
77	A	4	3	1.00	10	0.300
78	A	5	5	1.00	10	0.500
79	A	4	4	1.00	10	0.400
80	A	11	8	1.00	10	0.800
81	A	11	8	1.00	10	0.800
82	A	10	7	1.00	6	1.167
83	A	10	7	1.00	10	0.700
84	A	11	8	1.00	10	0.800
85	A	6	4	1.00	10	0.400
86	A	5	4	1.00	8	0.500
87	A	4	4	1.00	6	0.667
88	A	4	3	1.00	10	0.300
89	A	4	4	1.00	10	0.400
90	A	5	4	1.00	10	0.400
91	A	3	2	1.00	12	0.167
92	A	3	2	1.00	12	0.167

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
93	A	2	2	1.00	12	0.167
94	A	4	4	1.00	12	0.333
95	A	3	2	1.00	12	0.167
96	A	3	3	1.00	4	0.750
97	A	4	3	1.00	10	0.300
98	A	4	3	1.00	10	0.300
99	A	7	6	1.00	10	0.600
100	A	7	6	1.00	10	0.600
101	A	7	6	1.00	8	0.750
102	A	3	3	1.00	6	0.500
103	A	5	5	1.00	10	0.500
104	A	7	7	1.00	10	0.700
105	A	8	7	1.00	10	0.700
106	A	8	7	1.00	10	0.700
107	A	37	7	1.02	16	0.438
108	A	5	5	1.00	14	0.357
109	A	37	10	1.25	16	0.625
110	A	57	11	1.11	16	0.688
111	A	55	16	1.00	18	0.889
112	A	65	19	1.00	18	1.056
113	A	12	8	1.00	19	0.421
114	A	2	2	1.00	28	0.071
115	A	3	3	1.00	33	0.091
116	A	0	0	0.00	0	0.000
117	A	0	0	0.00	0	0.000
118	A	4	4	1.00	35	0.114
119	A	5	5	1.00	40	0.125
120	A	0	0	0.00	0	0.000
121	A	0	0	0.00	0	0.000
122	A	5	4	1.00	14	0.286
123	A	4	4	1.00	12	0.333
124	A	4	3	1.00	14	0.214
125	A	6	6	1.00	14	0.429
126	A	5	4	1.00	12	0.333
127	A	5	4	1.00	19	0.210
128	A	0	0	0.00	0	0.000

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
129	A	7	6	1.00	18	0.333
130	A	7	6	1.00	18	0.333
131	A	7	6	1.00	16	0.375
132	A	4	3	1.00	10	0.300
133	A	5	5	1.00	18	0.278
134	A	8	8	1.00	18	0.444
135	A	9	8	1.00	18	0.444
136	A	16	13	1.00	20	0.650
137	A	13	10	1.00	18	0.556
138	A	6	6	1.00	12	0.500
139	A	2	2	1.00	20	0.100
140	A	25	25	1.00	20	1.250
141	A	21	14	1.00	20	0.700
142	A	15	11	1.00	18	0.611
143	A	6	7	1.00	12	0.583
144	A	2	2	1.00	20	0.100
145	A	35	22	1.00	20	1.100
146	A	6	4	1.00	18	0.222
147	A	0	0	0.00	0	0.000
148	A	0	0	0.00	0	0.000
149	A	4	4	1.00	12	0.333
150	A	4	4	1.00	14	0.286
151	A	0	0	0.00	0	0.000
152	A	9	7	1.00	40	0.175
153	A	7	6	1.00	40	0.150
154	A	4	4	1.00	38	0.105
155	A	0	0	0.00	0	0.000
156	A	0	0	0.00	0	0.000
157	A	2	2	1.00	7	0.286
158	A	11	6	1.00	15	0.400
159	A	9	5	1.00	13	0.385
160	A	7	4	1.00	11	0.364
161	A	0	0	0.00	0	0.000
162	A	7	7	1.00	21	0.333
163	A	6	6	1.00	19	0.316
164	A	5	5	1.00	17	0.294

Continued on next page

Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	number of rules / integrand leaf size
165	A	0	0	0.00	0	0.000
166	A	7	7	1.00	22	0.318
167	A	6	6	1.00	20	0.300
168	A	5	5	1.00	18	0.278
169	A	0	0	0.00	0	0.000
170	A	2	2	1.00	7	0.286
171	A	11	6	1.00	15	0.400
172	A	9	5	1.00	13	0.385
173	A	7	4	1.00	11	0.364
174	A	0	0	0.00	0	0.000
175	A	7	7	1.00	21	0.333
176	A	6	6	1.00	19	0.316
177	A	5	5	1.00	17	0.294
178	A	0	0	0.00	0	0.000
179	A	7	7	1.00	22	0.318
180	A	6	6	1.00	20	0.300
181	A	5	5	1.00	18	0.278
182	A	0	0	0.00	0	0.000
183	A	12	6	1.00	15	0.400
184	A	10	6	1.00	15	0.400
185	A	8	5	1.00	13	0.385
186	A	6	4	1.00	7	0.571
187	A	0	0	0.00	0	0.000
188	A	11	6	1.00	15	0.400
189	A	9	5	1.00	13	0.385
190	A	7	4	1.00	11	0.364
191	A	0	0	0.00	0	0.000
192	A	7	7	1.00	19	0.368
193	A	6	6	1.00	17	0.353
194	A	5	5	1.00	15	0.333
195	A	0	0	0.00	0	0.000
196	A	7	7	1.00	22	0.318
197	A	6	6	1.00	20	0.300
198	A	5	5	1.00	18	0.278
199	A	0	0	0.00	0	0.000
200	A	12	6	1.00	15	0.400

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
201	A	10	6	1.00	15	0.400
202	A	8	5	1.00	13	0.385
203	A	6	4	1.00	7	0.571
204	A	0	0	0.00	0	0.000
205	A	11	6	1.00	15	0.400
206	A	9	5	1.00	13	0.385
207	A	7	4	1.00	11	0.364
208	A	0	0	0.00	0	0.000
209	A	7	7	1.00	19	0.368
210	A	6	6	1.00	17	0.353
211	A	5	5	1.00	15	0.333
212	A	0	0	0.00	0	0.000
213	A	7	7	1.00	22	0.318
214	A	6	6	1.00	20	0.300
215	A	5	5	1.00	18	0.278
216	A	0	0	0.00	0	0.000
217	A	13	9	1.00	24	0.375
218	A	4	3	1.00	4	0.750
219	A	7	4	1.00	6	0.667
220	A	9	5	1.00	8	0.625
221	A	4	3	1.00	8	0.375
222	A	7	4	1.00	10	0.400
223	A	9	5	1.00	12	0.417
224	A	6	6	1.00	12	0.500
225	A	25	8	1.00	14	0.571
226	A	29	9	1.00	16	0.562
227	A	5	6	1.00	10	0.600
228	A	1	1	1.00	19	0.053
229	A	5	5	1.00	20	0.250
230	A	8	7	1.00	20	0.350
231	A	13	10	1.00	20	0.500
232	A	13	10	1.00	20	0.500
233	A	8	7	1.00	20	0.350
234	A	5	5	1.00	20	0.250

Chapter 3

Listing of integrals

3.1 $\int x^5 \cot^{-1}(ax)\,dx$

Optimal. Leaf size=51

$$-\frac{\tan^{-1}(ax)}{6a^6}+\frac{x}{6a^5}-\frac{x^3}{18a^3}+\frac{1}{6}x^6\cot^{-1}(ax)+\frac{x^5}{30a}$$

[Out] 1/6*x/a^5-1/18*x^3/a^3+1/30*x^5/a+1/6*x^6*arccot(a*x)-1/6*arctan(a*x)/a^6

Rubi [A] time = 0.03, antiderivative size = 51, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 8, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.375, Rules used = {4853, 302, 203}

$$-\frac{x^3}{18a^3}+\frac{x}{6a^5}-\frac{\tan^{-1}(ax)}{6a^6}+\frac{x^5}{30a}+\frac{1}{6}x^6\cot^{-1}(ax)$$

Antiderivative was successfully verified.

[In] Int[x^5*ArcCot[a*x],x]

[Out] x/(6*a^5) - x^3/(18*a^3) + x^5/(30*a) + (x^6*ArcCot[a*x])/6 - ArcTan[a*x]/(6*a^6)

Rule 203

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

Rule 302

```
Int[(x_)^(m_)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Int[PolynomialDivide[x
^m, a + b*x^n, x], x] /; FreeQ[{a, b}, x] && IGtQ[m, 0] && IGtQ[n, 0] && Gt
Q[m, 2*n - 1]
```

Rule 4853

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcCot[c*x])^p)/(d*(m + 1)), x] + Dist[(b*c*p
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcCot[c*x])^(p - 1))/(1 + c^2*x^2
), x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[p, 0] && (EqQ[p, 1] || Integ
erQ[m]) && NeQ[m, -1]
```

Rubi steps

$$
\begin{aligned}
\int x^5 \cot^{-1}(ax)\,dx &= \frac{1}{6}x^6\cot^{-1}(ax) + \frac{1}{6}a\int \frac{x^6}{1+a^2x^2}\,dx \\
&= \frac{1}{6}x^6\cot^{-1}(ax) + \frac{1}{6}a\int \left(\frac{1}{a^6} - \frac{x^2}{a^4} + \frac{x^4}{a^2} - \frac{1}{a^6\left(1+a^2x^2\right)}\right)dx \\
&= \frac{x}{6a^5} - \frac{x^3}{18a^3} + \frac{x^5}{30a} + \frac{1}{6}x^6\cot^{-1}(ax) - \frac{\int \frac{1}{1+a^2x^2}\,dx}{6a^5} \\
&= \frac{x}{6a^5} - \frac{x^3}{18a^3} + \frac{x^5}{30a} + \frac{1}{6}x^6\cot^{-1}(ax) - \frac{\tan^{-1}(ax)}{6a^6}
\end{aligned}
$$

Mathematica [A] time = 0.00, size = 51, normalized size = 1.00

$$
-\frac{\tan^{-1}(ax)}{6a^6} + \frac{x}{6a^5} - \frac{x^3}{18a^3} + \frac{1}{6}x^6\cot^{-1}(ax) + \frac{x^5}{30a}
$$

Antiderivative was successfully verified.

```
[In] Integrate[x^5*ArcCot[a*x],x]
```

```
[Out] x/(6*a^5) - x^3/(18*a^3) + x^5/(30*a) + (x^6*ArcCot[a*x])/6 - ArcTan[a*x]/(
6*a^6)
```

fricas [A] time = 0.91, size = 41, normalized size = 0.80

$$
\frac{3\,a^5x^5 - 5\,a^3x^3 + 15\,ax + 15\left(a^6x^6+1\right)\operatorname{arccot}(ax)}{90\,a^6}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*arccot(a*x),x, algorithm="fricas")
```

```
[Out] 1/90*(3*a^5*x^5 - 5*a^3*x^3 + 15*a*x + 15*(a^6*x^6 + 1)*arccot(a*x))/a^6
```

giac [A] time = 0.13, size = 59, normalized size = 1.16

$$
\frac{1}{90}\left(\frac{15\,x^6\arctan\left(\frac{1}{ax}\right)}{a} - \frac{x^5\left(\frac{5}{a^2x^2} - \frac{15}{a^4x^4} - 3\right)}{a^2} + \frac{15\,\arctan\left(\frac{1}{ax}\right)}{a^7}\right)a
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*arccot(a*x),x, algorithm="giac")
```

```
[Out] 1/90*(15*x^6*arctan(1/(a*x))/a - x^5*(5/(a^2*x^2) - 15/(a^4*x^4) - 3)/a^2 +
 15*arctan(1/(a*x))/a^7)*a
```

maple [A] time = 0.04, size = 42, normalized size = 0.82

$$
\frac{x}{6a^5} - \frac{x^3}{18a^3} + \frac{x^5}{30a} + \frac{x^6\operatorname{arccot}(ax)}{6} - \frac{\arctan(ax)}{6a^6}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^5*arccot(a*x),x)
```

```
[Out] 1/6*x/a^5-1/18*x^3/a^3+1/30*x^5/a+1/6*x^6*arccot(a*x)-1/6*arctan(a*x)/a^6
```

maxima [A] time = 0.41, size = 47, normalized size = 0.92

$$
\frac{1}{6}\,x^6\operatorname{arccot}(ax) + \frac{1}{90}\,a\left(\frac{3\,a^4x^5 - 5\,a^2x^3 + 15\,x}{a^6} - \frac{15\,\arctan(ax)}{a^7}\right)
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*arccot(a*x),x, algorithm="maxima")
```

```
[Out] 1/6*x^6*arccot(a*x) + 1/90*a*((3*a^4*x^5 - 5*a^2*x^3 + 15*x)/a^6 - 15*arcta
n(a*x)/a^7)
```

mupad [B] time = 0.80, size = 55, normalized size = 1.08

$$\begin{cases} \frac{\pi x^6}{12} & \text{if } a = 0 \\ \frac{x^6 \operatorname{acot}(a x)}{6} - \frac{\frac{\operatorname{atan}(a x)}{6} - \frac{a x}{6} + \frac{a^3 x^3}{18} - \frac{a^5 x^5}{30}}{a^6} & \text{if } a \neq 0 \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^5*acot(a*x),x)
```

```
[Out] piecewise(a == 0, (x^6*pi)/12, a ~= 0, - (atan(a*x)/6 - (a*x)/6 + (a^3*x^3)
/18 - (a^5*x^5)/30)/a^6 + (x^6*acot(a*x))/6)
```

sympy [A] time = 1.22, size = 48, normalized size = 0.94

$$\begin{cases} \frac{x^6 \operatorname{acot}(ax)}{6} + \frac{x^5}{30a} - \frac{x^3}{18a^3} + \frac{x}{6a^5} + \frac{\operatorname{acot}(ax)}{6a^6} & \text{for } a \neq 0 \\ \frac{\pi x^6}{12} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**5*acot(a*x),x)
```

```
[Out] Piecewise((x**6*acot(a*x)/6 + x**5/(30*a) - x**3/(18*a**3) + x/(6*a**5) + a
cot(a*x)/(6*a**6), Ne(a, 0)), (pi*x**6/12, True))
```

3.2 $\int x^4 \cot^{-1}(ax)\, dx$

Optimal. Leaf size=49

$$-\frac{x^2}{10a^3}+\frac{\log\left(a^2x^2+1\right)}{10a^5}+\frac{1}{5}x^5\cot^{-1}(ax)+\frac{x^4}{20a}$$

```
[Out] -1/10*x^2/a^3+1/20*x^4/a+1/5*x^5*arccot(a*x)+1/10*ln(a^2*x^2+1)/a^5
```

Rubi [A] time = 0.04, antiderivative size = 49, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 8, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.375, Rules used = {4853, 266, 43}

$$-\frac{x^2}{10a^3}+\frac{\log\left(a^2x^2+1\right)}{10a^5}+\frac{x^4}{20a}+\frac{1}{5}x^5\cot^{-1}(ax)$$

Antiderivative was successfully verified.

```
[In] Int[x^4*ArcCot[a*x],x]
```

```
[Out] -x^2/(10*a^3) + x^4/(20*a) + (x^5*ArcCot[a*x])/5 + Log[1 + a^2*x^2]/(10*a^5
)
```

Rule 43

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

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 4853

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcCot[c*x])^p)/(d*(m + 1)), x] + Dist[(b*c*p
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcCot[c*x])^(p - 1))/(1 + c^2*x^2
), x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[p, 0] && (EqQ[p, 1] || Integ
erQ[m]) && NeQ[m, -1]
```

Rubi steps

$$\begin{aligned}
\int x^4\cot^{-1}(ax)\,dx &= \frac{1}{5}x^5\cot^{-1}(ax)+\frac{1}{5}a\int\frac{x^5}{1+a^2x^2}\,dx\\
&= \frac{1}{5}x^5\cot^{-1}(ax)+\frac{1}{10}a\,\text{Subst}\left(\int\frac{x^2}{1+a^2x}\,dx,x,x^2\right)\\
&= \frac{1}{5}x^5\cot^{-1}(ax)+\frac{1}{10}a\,\text{Subst}\left(\int\left(-\frac{1}{a^4}+\frac{x}{a^2}+\frac{1}{a^4\left(1+a^2x\right)}\right)dx,x,x^2\right)\\
&= -\frac{x^2}{10a^3}+\frac{x^4}{20a}+\frac{1}{5}x^5\cot^{-1}(ax)+\frac{\log\left(1+a^2x^2\right)}{10a^5}
\end{aligned}$$

Mathematica [A] time = 0.02, size = 49, normalized size = 1.00

$$-\frac{x^2}{10a^3}+\frac{\log\left(a^2x^2+1\right)}{10a^5}+\frac{1}{5}x^5\cot^{-1}(ax)+\frac{x^4}{20a}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^4*ArcCot[a*x],x]
[Out] -1/10*x^2/a^3 + x^4/(20*a) + (x^5*ArcCot[a*x])/5 + Log[1 + a^2*x^2]/(10*a^5
)
```

fricas [A] time = 0.54, size = 45, normalized size = 0.92

$$\frac{4\,a^5x^5\operatorname{arccot}(ax)+a^4x^4-2\,a^2x^2+2\,\log\left(a^2x^2+1\right)}{20\,a^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*arccot(a*x),x, algorithm="fricas")
[Out] 1/20*(4*a^5*x^5*arccot(a*x) + a^4*x^4 - 2*a^2*x^2 + 2*log(a^2*x^2 + 1))/a^5
```

giac [A] time = 0.12, size = 74, normalized size = 1.51

$$\frac{1}{20}\left(\frac{4\,x^5\arctan\left(\frac{1}{ax}\right)}{a}-\frac{x^4\left(\frac{2}{a^2x^2}-\frac{3}{a^4x^4}-1\right)}{a^2}+\frac{2\,\log\left(\frac{1}{a^2x^2}+1\right)}{a^6}-\frac{2\,\log\left(\frac{1}{a^2x^2}\right)}{a^6}\right)a$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*arccot(a*x),x, algorithm="giac")
[Out] 1/20*(4*x^5*arctan(1/(a*x))/a - x^4*(2/(a^2*x^2) - 3/(a^4*x^4) - 1)/a^2 + 2
*log(1/(a^2*x^2) + 1)/a^6 - 2*log(1/(a^2*x^2))/a^6)*a
```

maple [A] time = 0.04, size = 42, normalized size = 0.86

$$-\frac{x^2}{10a^3}+\frac{x^4}{20a}+\frac{x^5\operatorname{arccot}(ax)}{5}+\frac{\ln\left(a^2x^2+1\right)}{10a^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*arccot(a*x),x)
[Out] -1/10*x^2/a^3+1/20*x^4/a+1/5*x^5*arccot(a*x)+1/10*ln(a^2*x^2+1)/a^5
```

maxima [A] time = 0.31, size = 46, normalized size = 0.94

$$\frac{1}{5}\,x^5\operatorname{arccot}(ax)+\frac{1}{20}\,a\left(\frac{a^2x^4-2\,x^2}{a^4}+\frac{2\,\log\left(a^2x^2+1\right)}{a^6}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*arccot(a*x),x, algorithm="maxima")
[Out] 1/5*x^5*arccot(a*x) + 1/20*a*((a^2*x^4 - 2*x^2)/a^4 + 2*log(a^2*x^2 + 1)/a^
6)
```

mupad [B] time = 0.70, size = 56, normalized size = 1.14

$$\begin{cases}\frac{\pi\,x^5}{10} & \text{if } a=0\\ \frac{2\,\ln\left(a^2\,x^2+1\right)-2\,a^2\,x^2+a^4\,x^4}{20\,a^5}+\frac{x^5\,\mathrm{acot}(a\,x)}{5} & \text{if } a\neq 0\end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*acot(a*x),x)
```

```
[Out] piecewise(a == 0, (x^5*pi)/10, a ~= 0, (2*log(a^2*x^2 + 1) - 2*a^2*x^2 + a^
4*x^4)/(20*a^5) + (x^5*acot(a*x))/5)
```

sympy [A] time = 0.87, size = 46, normalized size = 0.94

$$\begin{cases} \frac{x^5 \operatorname{acot}(ax)}{5} + \frac{x^4}{20a} - \frac{x^2}{10a^3} + \frac{\log(a^2x^2+1)}{10a^5} & \text{for } a \neq 0 \\ \frac{\pi x^5}{10} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*acot(a*x),x)
```

```
[Out] Piecewise((x**5*acot(a*x)/5 + x**4/(20*a) - x**2/(10*a**3) + log(a**2*x**2
+ 1)/(10*a**5), Ne(a, 0)), (pi*x**5/10, True))
```

3.3 $\int x^3 \cot^{-1}(ax)\,dx$

Optimal. Leaf size=41

$$\frac{\tan^{-1}(ax)}{4a^4}-\frac{x}{4a^3}+\frac{1}{4}x^4\cot^{-1}(ax)+\frac{x^3}{12a}$$

```
[Out] -1/4*x/a^3+1/12*x^3/a+1/4*x^4*arccot(a*x)+1/4*arctan(a*x)/a^4
```

Rubi [A] time = 0.02, antiderivative size = 41, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 8, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.375, Rules used = {4853, 302, 203}

$$-\frac{x}{4a^3}+\frac{\tan^{-1}(ax)}{4a^4}+\frac{x^3}{12a}+\frac{1}{4}x^4\cot^{-1}(ax)$$

Antiderivative was successfully verified.

```
[In] Int[x^3*ArcCot[a*x],x]
```

```
[Out] -x/(4*a^3) + x^3/(12*a) + (x^4*ArcCot[a*x])/4 + ArcTan[a*x]/(4*a^4)
```

Rule 203

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

Rule 302

```
Int[(x_)^(m_)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Int[PolynomialDivide[x
^m, a + b*x^n, x], x] /; FreeQ[{a, b}, x] && IGtQ[m, 0] && IGtQ[n, 0] && Gt
Q[m, 2*n - 1]
```

Rule 4853

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcCot[c*x])^p)/(d*(m + 1)), x] + Dist[(b*c*p
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcCot[c*x])^(p - 1))/(1 + c^2*x^2
), x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[p, 0] && (EqQ[p, 1] || Integ
erQ[m]) && NeQ[m, -1]
```

Rubi steps

$$\begin{aligned}\int x^3\cot^{-1}(ax)\,dx&=\frac{1}{4}x^4\cot^{-1}(ax)+\frac{1}{4}a\int\frac{x^4}{1+a^2x^2}\,dx\\&=\frac{1}{4}x^4\cot^{-1}(ax)+\frac{1}{4}a\int\left(-\frac{1}{a^4}+\frac{x^2}{a^2}+\frac{1}{a^4\left(1+a^2x^2\right)}\right)dx\\&=-\frac{x}{4a^3}+\frac{x^3}{12a}+\frac{1}{4}x^4\cot^{-1}(ax)+\frac{\int\frac{1}{1+a^2x^2}\,dx}{4a^3}\\&=-\frac{x}{4a^3}+\frac{x^3}{12a}+\frac{1}{4}x^4\cot^{-1}(ax)+\frac{\tan^{-1}(ax)}{4a^4}\end{aligned}$$

Mathematica [A] time = 0.00, size = 41, normalized size = 1.00

$$\frac{\tan^{-1}(ax)}{4a^4}-\frac{x}{4a^3}+\frac{1}{4}x^4\cot^{-1}(ax)+\frac{x^3}{12a}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^3*ArcCot[a*x],x]
```

```
[Out] -1/4*x/a^3 + x^3/(12*a) + (x^4*ArcCot[a*x])/4 + ArcTan[a*x]/(4*a^4)
```

fricas [A] time = 1.01, size = 32, normalized size = 0.78

$$\frac{a^3x^3 - 3\,ax + 3\left(a^4x^4 - 1\right)\operatorname{arccot}(ax)}{12\,a^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*arccot(a*x),x, algorithm="fricas")
```

```
[Out] 1/12*(a^3*x^3 - 3*a*x + 3*(a^4*x^4 - 1)*arccot(a*x))/a^4
```

giac [A] time = 0.13, size = 51, normalized size = 1.24

$$\frac{1}{12}\left(\frac{3\,x^4\arctan\left(\frac{1}{ax}\right)}{a} - \frac{x^3\left(\frac{3}{a^2x^2} - 1\right)}{a^2} - \frac{3\,\arctan\left(\frac{1}{ax}\right)}{a^5}\right)a$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*arccot(a*x),x, algorithm="giac")
```

```
[Out] 1/12*(3*x^4*arctan(1/(a*x))/a - x^3*(3/(a^2*x^2) - 1)/a^2 - 3*arctan(1/(a*x
))/a^5)*a
```

maple [A] time = 0.04, size = 34, normalized size = 0.83

$$-\frac{x}{4a^3} + \frac{x^3}{12a} + \frac{x^4\operatorname{arccot}(ax)}{4} + \frac{\arctan(ax)}{4a^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*arccot(a*x),x)
```

```
[Out] -1/4*x/a^3+1/12*x^3/a+1/4*x^4*arccot(a*x)+1/4*arctan(a*x)/a^4
```

maxima [A] time = 0.41, size = 38, normalized size = 0.93

$$\frac{1}{4}\,x^4\operatorname{arccot}(ax) + \frac{1}{12}\,a\left(\frac{a^2x^3 - 3\,x}{a^4} + \frac{3\,\arctan(ax)}{a^5}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*arccot(a*x),x, algorithm="maxima")
```

```
[Out] 1/4*x^4*arccot(a*x) + 1/12*a*((a^2*x^3 - 3*x)/a^4 + 3*arctan(a*x)/a^5)
```

mupad [B] time = 0.72, size = 46, normalized size = 1.12

$$\begin{cases} \frac{\pi\,x^4}{8} & \text{if } a = 0 \\ \frac{3\,\mathrm{atan}(a\,x) - 3\,a\,x + a^3\,x^3}{12\,a^4} + \frac{x^4\,\mathrm{acot}(a\,x)}{4} & \text{if } a \neq 0 \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*acot(a*x),x)
```

```
[Out] piecewise(a == 0, (x^4*pi)/8, a ~= 0, (3*atan(a*x) - 3*a*x + a^3*x^3)/(12*a
^4) + (x^4*acot(a*x))/4)
```

sympy [A] time = 0.68, size = 39, normalized size = 0.95

$$\begin{cases} \frac{x^4 \operatorname{acot}(ax)}{4} + \frac{x^3}{12a} - \frac{x}{4a^3} - \frac{\operatorname{acot}(ax)}{4a^4} & \text{for } a \neq 0 \\ \frac{\pi x^4}{8} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*acot(a*x),x)
```

```
[Out] Piecewise((x**4*acot(a*x)/4 + x**3/(12*a) - x/(4*a**3) - acot(a*x)/(4*a**4)
, Ne(a, 0)), (pi*x**4/8, True))
```

3.4 $\int x^2 \cot^{-1}(ax)\,dx$

Optimal. Leaf size=39

$$-\frac{\log\left(a^2x^2+1\right)}{6a^3}+\frac{1}{3}x^3\cot^{-1}(ax)+\frac{x^2}{6a}$$

```
[Out] 1/6*x^2/a+1/3*x^3*arccot(a*x)-1/6*ln(a^2*x^2+1)/a^3
```

Rubi [A] time = 0.03, antiderivative size = 39, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 8, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.375, Rules used = {4853, 266, 43}

$$-\frac{\log\left(a^2x^2+1\right)}{6a^3}+\frac{x^2}{6a}+\frac{1}{3}x^3\cot^{-1}(ax)$$

Antiderivative was successfully verified.

```
[In] Int[x^2*ArcCot[a*x],x]
```

```
[Out] x^2/(6*a) + (x^3*ArcCot[a*x])/3 - Log[1 + a^2*x^2]/(6*a^3)
```

Rule 43

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

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 4853

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcCot[c*x])^p)/(d*(m + 1)), x] + Dist[(b*c*p
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcCot[c*x])^(p - 1))/(1 + c^2*x^2
), x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[p, 0] && (EqQ[p, 1] || Integ
erQ[m]) && NeQ[m, -1]
```

Rubi steps

$$\begin{aligned}
\int x^2\cot^{-1}(ax)\,dx &= \frac{1}{3}x^3\cot^{-1}(ax)+\frac{1}{3}a\int\frac{x^3}{1+a^2x^2}\,dx\\
&= \frac{1}{3}x^3\cot^{-1}(ax)+\frac{1}{6}a\,\text{Subst}\left(\int\frac{x}{1+a^2x}\,dx,x,x^2\right)\\
&= \frac{1}{3}x^3\cot^{-1}(ax)+\frac{1}{6}a\,\text{Subst}\left(\int\left(\frac{1}{a^2}-\frac{1}{a^2\left(1+a^2x\right)}\right)dx,x,x^2\right)\\
&= \frac{x^2}{6a}+\frac{1}{3}x^3\cot^{-1}(ax)-\frac{\log\left(1+a^2x^2\right)}{6a^3}
\end{aligned}$$

Mathematica [A] time = 0.01, size = 39, normalized size = 1.00

$$-\frac{\log\left(a^2x^2+1\right)}{6a^3}+\frac{1}{3}x^3\cot^{-1}(ax)+\frac{x^2}{6a}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*ArcCot[a*x],x]
[Out] x^2/(6*a) + (x^3*ArcCot[a*x])/3 - Log[1 + a^2*x^2]/(6*a^3)
```

fricas [A] time = 0.73, size = 37, normalized size = 0.95

$$\frac{2 a^3 x^3 \operatorname{arccot}(ax) + a^2 x^2 - \log\left(a^2 x^2 + 1\right)}{6 a^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*arccot(a*x),x, algorithm="fricas")
[Out] 1/6*(2*a^3*x^3*arccot(a*x) + a^2*x^2 - log(a^2*x^2 + 1))/a^3
```

giac [A] time = 0.12, size = 64, normalized size = 1.64

$$\frac{1}{6}\left(\frac{2 x^3 \arctan\left(\frac{1}{ax}\right)}{a} - \frac{x^2\left(\frac{1}{a^2x^2} - 1\right)}{a^2} - \frac{\log\left(\frac{1}{a^2x^2} + 1\right)}{a^4} + \frac{\log\left(\frac{1}{a^2x^2}\right)}{a^4}\right)a$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*arccot(a*x),x, algorithm="giac")
[Out] 1/6*(2*x^3*arctan(1/(a*x))/a - x^2*(1/(a^2*x^2) - 1)/a^2 - log(1/(a^2*x^2)
+ 1)/a^4 + log(1/(a^2*x^2))/a^4)*a
```

maple [A] time = 0.04, size = 34, normalized size = 0.87

$$\frac{x^2}{6a} + \frac{x^3 \operatorname{arccot}(ax)}{3} - \frac{\ln\left(a^2x^2 + 1\right)}{6a^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*arccot(a*x),x)
[Out] 1/6*x^2/a+1/3*x^3*arccot(a*x)-1/6*ln(a^2*x^2+1)/a^3
```

maxima [A] time = 0.31, size = 36, normalized size = 0.92

$$\frac{1}{3} x^3 \operatorname{arccot}(ax) + \frac{1}{6} a\left(\frac{x^2}{a^2} - \frac{\log\left(a^2x^2 + 1\right)}{a^4}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*arccot(a*x),x, algorithm="maxima")
[Out] 1/3*x^3*arccot(a*x) + 1/6*a*(x^2/a^2 - log(a^2*x^2 + 1)/a^4)
```

mupad [B] time = 0.69, size = 49, normalized size = 1.26

$$\begin{cases} \frac{\pi x^3}{6} & \text{if } a = 0 \\ \frac{\frac{x^2}{2} - \frac{\ln\left(a^2 x^2+1\right)}{2 a^2}}{3 a} + \frac{x^3 \operatorname{acot}(a x)}{3} & \text{if } a \neq 0 \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*acot(a*x),x)
```

```
[Out] piecewise(a == 0, (x^3*pi)/6, a ~= 0, (x^2/2 - log(a^2*x^2 + 1)/(2*a^2))/(3
*a) + (x^3*acot(a*x))/3)
```

sympy [A] time = 0.48, size = 37, normalized size = 0.95

$$\begin{cases} \frac{x^3 \operatorname{acot}(ax)}{3} + \frac{x^2}{6a} - \frac{\log(a^2x^2+1)}{6a^3} & \text{for } a \neq 0 \\ \frac{\pi x^3}{6} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*acot(a*x),x)
```

```
[Out] Piecewise((x**3*acot(a*x)/3 + x**2/(6*a) - log(a**2*x**2 + 1)/(6*a**3), Ne(
a, 0)), (pi*x**3/6, True))
```

3.5 $\int x \cot^{-1}(ax) \, dx$

Optimal. Leaf size=31

$$-\frac{\tan^{-1}(ax)}{2a^2}+\frac{1}{2}x^2\cot^{-1}(ax)+\frac{x}{2a}$$

[Out] 1/2*x/a+1/2*x^2*arccot(a*x)-1/2*arctan(a*x)/a^2

Rubi [A] time = 0.01, antiderivative size = 31, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 6, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.500, Rules used = {4853, 321, 203}

$$-\frac{\tan^{-1}(ax)}{2a^2}+\frac{1}{2}x^2\cot^{-1}(ax)+\frac{x}{2a}$$

Antiderivative was successfully verified.

[In] Int[x*ArcCot[a*x],x]

[Out] x/(2*a) + (x^2*ArcCot[a*x])/2 - ArcTan[a*x]/(2*a^2)

Rule 203

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

Rule 321

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

Rule 4853

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcCot[c*x])^p)/(d*(m + 1)), x] + Dist[(b*c*p
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcCot[c*x])^(p - 1))/(1 + c^2*x^2
), x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[p, 0] && (EqQ[p, 1] || Integ
erQ[m]) && NeQ[m, -1]
```

Rubi steps

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

Mathematica [A] time = 0.00, size = 31, normalized size = 1.00

$$-\frac{\tan^{-1}(ax)}{2a^2}+\frac{1}{2}x^2\cot^{-1}(ax)+\frac{x}{2a}$$

Antiderivative was successfully verified.

```
[In] Integrate[x*ArcCot[a*x],x]
[Out] x/(2*a) + (x^2*ArcCot[a*x])/2 - ArcTan[a*x]/(2*a^2)
```

fricas [A] time = 0.68, size = 23, normalized size = 0.74

$$\frac{ax + \left(a^2x^2 + 1\right)\operatorname{arccot}(ax)}{2\,a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*arccot(a*x),x, algorithm="fricas")
[Out] 1/2*(a*x + (a^2*x^2 + 1)*arccot(a*x))/a^2
```

giac [A] time = 0.13, size = 36, normalized size = 1.16

$$\frac{1}{2}\left(\frac{x^2\arctan\left(\frac{1}{ax}\right)}{a} + \frac{x}{a^2} + \frac{\arctan\left(\frac{1}{ax}\right)}{a^3}\right)a$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*arccot(a*x),x, algorithm="giac")
[Out] 1/2*(x^2*arctan(1/(a*x))/a + x/a^2 + arctan(1/(a*x))/a^3)*a
```

maple [A] time = 0.04, size = 26, normalized size = 0.84

$$\frac{x}{2a} + \frac{x^2\operatorname{arccot}(ax)}{2} - \frac{\arctan(ax)}{2a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*arccot(a*x),x)
[Out] 1/2*x/a+1/2*x^2*arccot(a*x)-1/2*arctan(a*x)/a^2
```

maxima [A] time = 0.41, size = 28, normalized size = 0.90

$$\frac{1}{2}\,x^2\operatorname{arccot}(ax) + \frac{1}{2}\,a\left(\frac{x}{a^2} - \frac{\arctan(ax)}{a^3}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*arccot(a*x),x, algorithm="maxima")
[Out] 1/2*x^2*arccot(a*x) + 1/2*a*(x/a^2 - arctan(a*x)/a^3)
```

mupad [B] time = 0.76, size = 39, normalized size = 1.26

$$\begin{cases} \frac{\pi\,x^2}{4} & \text{if } a = 0 \\ \frac{x - \frac{\operatorname{atan}(a\,x)}{a}}{2\,a} + \frac{x^2\operatorname{acot}(a\,x)}{2} & \text{if } a \neq 0 \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*acot(a*x),x)
[Out] piecewise(a == 0, (x^2*pi)/4, a ~= 0, (x - atan(a*x)/a)/(2*a) + (x^2*acot(a
*x))/2)
```

sympy [A] time = 0.34, size = 31, normalized size = 1.00

$$\begin{cases} \frac{x^2 \operatorname{acot}(ax)}{2} + \frac{x}{2a} + \frac{\operatorname{acot}(ax)}{2a^2} & \text{for } a \neq 0 \\ \frac{\pi x^2}{4} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*acot(a*x),x)
```

```
[Out] Piecewise((x**2*acot(a*x)/2 + x/(2*a) + acot(a*x)/(2*a**2), Ne(a, 0)), (pi*
x**2/4, True))
```

3.6 $\int \cot^{-1}(ax)\,dx$

Optimal. Leaf size=24

$$\frac{\log\left(a^2x^2+1\right)}{2a}+x\cot^{-1}(ax)$$

```
[Out] x*arccot(a*x)+1/2*ln(a^2*x^2+1)/a
```

Rubi [A] time = 0.01, antiderivative size = 24, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 4, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.500, Rules used = {4847, 260}

$$\frac{\log\left(a^2x^2+1\right)}{2a}+x\cot^{-1}(ax)$$

Antiderivative was successfully verified.

```
[In] Int[ArcCot[a*x],x]
```

```
[Out] x*ArcCot[a*x] + Log[1 + a^2*x^2]/(2*a)
```

Rule 260

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

Rule 4847

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b*Ar
cCot[c*x])^p, x] + Dist[b*c*p, Int[(x*(a + b*ArcCot[c*x])^(p - 1))/(1 + c^2
*x^2), x], x] /; FreeQ[{a, b, c}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int \cot^{-1}(ax)\,dx &= x\cot^{-1}(ax)+a\int \frac{x}{1+a^2x^2}\,dx\\ &= x\cot^{-1}(ax)+\frac{\log\left(1+a^2x^2\right)}{2a}\end{aligned}$$

Mathematica [A] time = 0.00, size = 24, normalized size = 1.00

$$\frac{\log\left(a^2x^2+1\right)}{2a}+x\cot^{-1}(ax)$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcCot[a*x],x]
```

```
[Out] x*ArcCot[a*x] + Log[1 + a^2*x^2]/(2*a)
```

fricas [A] time = 0.75, size = 24, normalized size = 1.00

$$\frac{2\,ax\,\mathrm{arccot}\left(ax\right)+\log\left(a^2x^2+1\right)}{2\,a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(a*x),x, algorithm="fricas")
```

```
[Out] 1/2*(2*a*x*arccot(a*x) + log(a^2*x^2 + 1))/a
```

giac [B] time = 0.11, size = 45, normalized size = 1.88

$$\frac{1}{2}\,a\left(\frac{2\,x\arctan\left(\frac{1}{ax}\right)}{a}+\frac{\log\left(\frac{1}{a^2x^2}+1\right)}{a^2}-\frac{\log\left(\frac{1}{a^2x^2}\right)}{a^2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(a*x),x, algorithm="giac")
```

```
[Out] 1/2*a*(2*x*arctan(1/(a*x))/a + log(1/(a^2*x^2) + 1)/a^2 - log(1/(a^2*x^2))/
a^2)
```

maple [A] time = 0.04, size = 23, normalized size = 0.96

$$x\,\mathrm{arccot}\left(ax\right)+\frac{\ln\left(a^2x^2+1\right)}{2a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arccot(a*x),x)
```

```
[Out] x*arccot(a*x)+1/2*ln(a^2*x^2+1)/a
```

maxima [A] time = 0.32, size = 24, normalized size = 1.00

$$\frac{2\,ax\,\mathrm{arccot}\left(ax\right)+\log\left(a^2x^2+1\right)}{2\,a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(a*x),x, algorithm="maxima")
```

```
[Out] 1/2*(2*a*x*arccot(a*x) + log(a^2*x^2 + 1))/a
```

mupad [B] time = 0.14, size = 22, normalized size = 0.92

$$x\,\mathrm{acot}\left(a\,x\right)+\frac{\ln\left(a^2\,x^2+1\right)}{2\,a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(acot(a*x),x)
```

```
[Out] x*acot(a*x) + log(a^2*x^2 + 1)/(2*a)
```

sympy [A] time = 0.21, size = 24, normalized size = 1.00

$$\begin{cases} x\,\mathrm{acot}\left(ax\right)+\frac{\log\left(a^2x^2+1\right)}{2a} & \text{for}\ a\neq 0\\ \frac{\pi x}{2} & \text{otherwise}\end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(acot(a*x),x)
```

```
[Out] Piecewise((x*acot(a*x) + log(a**2*x**2 + 1)/(2*a), Ne(a, 0)), (pi*x/2, True
))
```

3.7 $\int \frac{\cot^{-1}(ax)}{x} \, dx$

Optimal. Leaf size=37

$$\frac{1}{2}i\text{Li}_2\left(\frac{i}{ax}\right)-\frac{1}{2}i\text{Li}_2\left(-\frac{i}{ax}\right)$$

```
[Out] -1/2*I*polylog(2,-I/a/x)+1/2*I*polylog(2,I/a/x)
```

Rubi [A] time = 0.03, antiderivative size = 37, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 8, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {4849, 2391}

$$\frac{1}{2}i\text{PolyLog}\left(2,\frac{i}{ax}\right)-\frac{1}{2}i\text{PolyLog}\left(2,-\frac{i}{ax}\right)$$

Antiderivative was successfully verified.

```
[In] Int[ArcCot[a*x]/x,x]
```

```
[Out] (-I/2)*PolyLog[2, (-I)/(a*x)] + (I/2)*PolyLog[2, I/(a*x)]
```

Rule 2391

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

Rule 4849

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))/(x_), x_Symbol] :> Simp[a*Log[x], x]
 + (Dist[(I*b)/2, Int[Log[1 - I/(c*x)]/x, x], x] - Dist[(I*b)/2, Int[Log[1
+ I/(c*x)]/x, x], x]) /; FreeQ[{a, b, c}, x]
```

Rubi steps

$$\begin{aligned}\int \frac{\cot^{-1}(ax)}{x} \, dx &= \frac{1}{2}i\int \frac{\log\left(1-\frac{i}{ax}\right)}{x} \, dx-\frac{1}{2}i\int \frac{\log\left(1+\frac{i}{ax}\right)}{x} \, dx\\ &= -\frac{1}{2}i\text{Li}_2\left(-\frac{i}{ax}\right)+\frac{1}{2}i\text{Li}_2\left(\frac{i}{ax}\right)\end{aligned}$$

Mathematica [A] time = 0.00, size = 37, normalized size = 1.00

$$\frac{1}{2}i\text{Li}_2\left(\frac{i}{ax}\right)-\frac{1}{2}i\text{Li}_2\left(-\frac{i}{ax}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcCot[a*x]/x,x]
```

```
[Out] (-1/2*I)*PolyLog[2, (-I)/(a*x)] + (I/2)*PolyLog[2, I/(a*x)]
```

fricas [F] time = 0.98, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\text{arccot}\,(ax)}{x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(a*x)/x,x, algorithm="fricas")
```

```
[Out] integral(arccot(a*x)/x, x)
```

giac [A] time = 0.13, size = 38, normalized size = 1.03

$$-\frac{1}{2}\left(\frac{x^2\arctan\left(\frac{1}{ax}\right)}{a}+\frac{x}{a^2}+\frac{\arctan\left(\frac{1}{ax}\right)}{a^3}\right)a^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(a*x)/x,x, algorithm="giac")
```

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

maple [B] time = 0.06, size = 63, normalized size = 1.70

$$\ln(ax)\,\mathrm{arccot}(ax)-\frac{i\ln(ax)\ln(iax+1)}{2}+\frac{i\ln(ax)\ln(-iax+1)}{2}-\frac{i\,\mathrm{dilog}(iax+1)}{2}+\frac{i\,\mathrm{dilog}(-iax+1)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arccot(a*x)/x,x)
```

```
[Out] ln(a*x)*arccot(a*x)-1/2*I*ln(a*x)*ln(1+I*a*x)+1/2*I*ln(a*x)*ln(1-I*a*x)-1/2
*I*dilog(1+I*a*x)+1/2*I*dilog(1-I*a*x)
```

maxima [B] time = 0.46, size = 56, normalized size = 1.51

$$\frac{1}{4}\pi\log\left(a^2x^2+1\right)-\arctan(ax)\log(ax)+\mathrm{arccot}(ax)\log(x)+\arctan(ax)\log(x)+\frac{1}{2}i\,\mathrm{Li}_2(i\,ax+1)-\frac{1}{2}i\,\mathrm{Li}_2(-i\,ax$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(a*x)/x,x, algorithm="maxima")
```

```
[Out] 1/4*pi*log(a^2*x^2 + 1) - arctan(a*x)*log(a*x) + arccot(a*x)*log(x) + arcta
n(a*x)*log(x) + 1/2*I*dilog(I*a*x + 1) - 1/2*I*dilog(-I*a*x + 1)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.03

$$\int\frac{\mathrm{acot}(a\,x)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(acot(a*x)/x,x)
```

```
[Out] int(acot(a*x)/x, x)
```

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

$$\int\frac{\mathrm{acot}(ax)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(acot(a*x)/x,x)
```

```
[Out] Integral(acot(a*x)/x, x)
```

3.8 $\int \frac{\cot^{-1}(ax)}{x^2} \, dx$

Optimal. Leaf size=30

$$\frac{1}{2}a\log\left(a^2x^2+1\right)-a\log(x)-\frac{\cot^{-1}(ax)}{x}$$

```
[Out] -arccot(a*x)/x-a*ln(x)+1/2*a*ln(a^2*x^2+1)
```

Rubi [A] time = 0.02, antiderivative size = 30, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 8, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.625, Rules used = {4853, 266, 36, 29, 31}

$$\frac{1}{2}a\log\left(a^2x^2+1\right)-a\log(x)-\frac{\cot^{-1}(ax)}{x}$$

Antiderivative was successfully verified.

```
[In] Int[ArcCot[a*x]/x^2,x]
```

```
[Out] -(ArcCot[a*x]/x) - a*Log[x] + (a*Log[1 + a^2*x^2])/2
```

Rule 29

```
Int[(x_)^(-1), x_Symbol] :> Simp[Log[x], x]
```

Rule 31

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

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
 x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 4853

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcCot[c*x])^p)/(d*(m + 1)), x] + Dist[(b*c*p
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcCot[c*x])^(p - 1))/(1 + c^2*x^2
), x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[p, 0] && (EqQ[p, 1] || Integ
erQ[m]) && NeQ[m, -1]
```

Rubi steps

$$
\begin{aligned}
\int \frac{\cot^{-1}(ax)}{x^2}\,dx &= -\frac{\cot^{-1}(ax)}{x} - a\int \frac{1}{x\left(1+a^2x^2\right)}\,dx \\
&= -\frac{\cot^{-1}(ax)}{x} - \frac{1}{2}a\,\text{Subst}\left(\int \frac{1}{x\left(1+a^2x\right)}\,dx, x, x^2\right) \\
&= -\frac{\cot^{-1}(ax)}{x} - \frac{1}{2}a\,\text{Subst}\left(\int \frac{1}{x}\,dx, x, x^2\right) + \frac{1}{2}a^3\,\text{Subst}\left(\int \frac{1}{1+a^2x}\,dx, x, x^2\right) \\
&= -\frac{\cot^{-1}(ax)}{x} - a\log(x) + \frac{1}{2}a\log\left(1+a^2x^2\right)
\end{aligned}
$$

Mathematica [A] time = 0.00, size = 30, normalized size = 1.00

$$\frac{1}{2}a\log\left(a^2x^2+1\right) - a\log(x) - \frac{\cot^{-1}(ax)}{x}$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcCot[a*x]/x^2,x]
[Out] -(ArcCot[a*x]/x) - a*Log[x] + (a*Log[1 + a^2*x^2])/2
```

fricas [A] time = 0.78, size = 31, normalized size = 1.03

$$\frac{ax\log\left(a^2x^2+1\right) - 2\,ax\log(x) - 2\,\operatorname{arccot}(ax)}{2\,x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(a*x)/x^2,x, algorithm="fricas")
[Out] 1/2*(a*x*log(a^2*x^2 + 1) - 2*a*x*log(x) - 2*arccot(a*x))/x
```

giac [A] time = 0.13, size = 32, normalized size = 1.07

$$-\frac{1}{2}\,a\left(\frac{2\,\arctan\left(\frac{1}{ax}\right)}{ax} - \log\left(\frac{1}{a^2x^2}+1\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(a*x)/x^2,x, algorithm="giac")
[Out] -1/2*a*(2*arctan(1/(a*x))/(a*x) - log(1/(a^2*x^2) + 1))
```

maple [A] time = 0.04, size = 31, normalized size = 1.03

$$-\frac{\operatorname{arccot}(ax)}{x} - a\ln(ax) + \frac{a\ln\left(a^2x^2+1\right)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arccot(a*x)/x^2,x)
[Out] -arccot(a*x)/x-a*ln(a*x)+1/2*a*ln(a^2*x^2+1)
```

maxima [A] time = 0.31, size = 30, normalized size = 1.00

$$\frac{1}{2}\,a\left(\log\left(a^2x^2+1\right) - \log\left(x^2\right)\right) - \frac{\operatorname{arccot}(ax)}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(a*x)/x^2,x, algorithm="maxima")
[Out] 1/2*a*(log(a^2*x^2 + 1) - log(x^2)) - arccot(a*x)/x
```

mupad [B] time = 0.23, size = 28, normalized size = 0.93

$$\frac{a\left(\ln\left(a^2\,x^2+1\right)-2\,\ln(x)\right)}{2}-\frac{\mathrm{acot}\left(a\,x\right)}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(acot(a*x)/x^2,x)
[Out] (a*(log(a^2*x^2 + 1) - 2*log(x)))/2 - acot(a*x)/x
```

sympy [A] time = 0.28, size = 24, normalized size = 0.80

$$-a\log\left(x\right)+\frac{a\log\left(a^2x^2+1\right)}{2}-\frac{\mathrm{acot}\left(ax\right)}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(acot(a*x)/x**2,x)
[Out] -a*log(x) + a*log(a**2*x**2 + 1)/2 - acot(a*x)/x
```

3.9 $\int \frac{\cot^{-1}(ax)}{x^3}\, dx$

Optimal. Leaf size=31

$$\frac{1}{2}a^2\tan^{-1}(ax) - \frac{\cot^{-1}(ax)}{2x^2} + \frac{a}{2x}$$

```
[Out] 1/2*a/x-1/2*arccot(a*x)/x^2+1/2*a^2*arctan(a*x)
```

Rubi [A] time = 0.01, antiderivative size = 31, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 8, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.375, Rules used = {4853, 325, 203}

$$\frac{1}{2}a^2\tan^{-1}(ax) - \frac{\cot^{-1}(ax)}{2x^2} + \frac{a}{2x}$$

Antiderivative was successfully verified.

```
[In] Int[ArcCot[a*x]/x^3,x]
[Out] a/(2*x) - ArcCot[a*x]/(2*x^2) + (a^2*ArcTan[a*x])/2
```

Rule 203

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

Rule 325

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

Rule 4853

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcCot[c*x])^p)/(d*(m + 1)), x] + Dist[(b*c*p
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcCot[c*x])^(p - 1))/(1 + c^2*x^2
), x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[p, 0] && (EqQ[p, 1] || Integ
erQ[m]) && NeQ[m, -1]
```

Rubi steps

$$\begin{aligned}
\int \frac{\cot^{-1}(ax)}{x^3}\, dx &= -\frac{\cot^{-1}(ax)}{2x^2} - \frac{1}{2}a\int \frac{1}{x^2\left(1+a^2x^2\right)}\, dx \\
&= \frac{a}{2x} - \frac{\cot^{-1}(ax)}{2x^2} + \frac{1}{2}a^3\int \frac{1}{1+a^2x^2}\, dx \\
&= \frac{a}{2x} - \frac{\cot^{-1}(ax)}{2x^2} + \frac{1}{2}a^2\tan^{-1}(ax)
\end{aligned}$$

Mathematica [C] time = 0.00, size = 36, normalized size = 1.16

$$\frac{a\, {}_2F_1\left(-\frac{1}{2},1;\frac{1}{2};-a^2x^2\right)}{2x} - \frac{\cot^{-1}(ax)}{2x^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcCot[a*x]/x^3,x]
```

```
[Out] -1/2*ArcCot[a*x]/x^2 + (a*Hypergeometric2F1[-1/2, 1, 1/2, -(a^2*x^2)])/(2*x
)
```

fricas [A] time = 0.57, size = 24, normalized size = 0.77

$$\frac{ax - \left(a^2x^2 + 1\right)\operatorname{arccot}(ax)}{2\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(a*x)/x^3,x, algorithm="fricas")
```

```
[Out] 1/2*(a*x - (a^2*x^2 + 1)*arccot(a*x))/x^2
```

giac [A] time = 0.11, size = 40, normalized size = 1.29

$$\frac{1}{2}\left(a\left(\frac{1}{ax} - \arctan\left(\frac{1}{ax}\right)\right) - \frac{\arctan\left(\frac{1}{ax}\right)}{ax^2}\right)a$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(a*x)/x^3,x, algorithm="giac")
```

```
[Out] 1/2*(a*(1/(a*x) - arctan(1/(a*x))) - arctan(1/(a*x))/(a*x^2))*a
```

maple [A] time = 0.04, size = 26, normalized size = 0.84

$$\frac{a}{2x} - \frac{\operatorname{arccot}(ax)}{2x^2} + \frac{a^2\arctan(ax)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arccot(a*x)/x^3,x)
```

```
[Out] 1/2*a/x-1/2*arccot(a*x)/x^2+1/2*a^2*arctan(a*x)
```

maxima [A] time = 0.41, size = 23, normalized size = 0.74

$$\frac{1}{2}\left(a\arctan(ax) + \frac{1}{x}\right)a - \frac{\operatorname{arccot}(ax)}{2\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(a*x)/x^3,x, algorithm="maxima")
```

```
[Out] 1/2*(a*arctan(a*x) + 1/x)*a - 1/2*arccot(a*x)/x^2
```

mupad [B] time = 0.70, size = 44, normalized size = 1.42

$$\begin{cases} -\frac{\pi}{4\,x^2} & \text{if } a = 0 \\ \frac{a^3\,\mathrm{atan}(a\,x)+\frac{a^2}{x}}{2\,a} - \frac{\mathrm{acot}(a\,x)}{2\,x^2} & \text{if } a \neq 0 \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(acot(a*x)/x^3,x)
```

[Out] piecewise(a == 0, -pi/(4*x^2), a ~= 0, (a^3*atan(a*x) + a^2/x)/(2*a) - acot
(a*x)/(2*x^2))

sympy [**A**] time = 0.48, size = 24, normalized size = 0.77

$$-\frac{a^2 \operatorname{acot}(ax)}{2} + \frac{a}{2x} - \frac{\operatorname{acot}(ax)}{2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(acot(a*x)/x**3,x)

[Out] -a**2*acot(a*x)/2 + a/(2*x) - acot(a*x)/(2*x**2)

3.10 $\int \frac{\cot^{-1}(ax)}{x^4}\,dx$

Optimal. Leaf size=46

$$\frac{1}{3}a^3\log(x)-\frac{1}{6}a^3\log\left(a^2x^2+1\right)-\frac{\cot^{-1}(ax)}{3x^3}+\frac{a}{6x^2}$$

```
[Out] 1/6*a/x^2-1/3*arccot(a*x)/x^3+1/3*a^3*ln(x)-1/6*a^3*ln(a^2*x^2+1)
```

Rubi [A] time = 0.03, antiderivative size = 46, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 8, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.375, Rules used = {4853, 266, 44}

$$-\frac{1}{6}a^3\log\left(a^2x^2+1\right)+\frac{1}{3}a^3\log(x)+\frac{a}{6x^2}-\frac{\cot^{-1}(ax)}{3x^3}$$

Antiderivative was successfully verified.

```
[In] Int[ArcCot[a*x]/x^4,x]
```

```
[Out] a/(6*x^2) - ArcCot[a*x]/(3*x^3) + (a^3*Log[x])/3 - (a^3*Log[1 + a^2*x^2])/6
```

Rule 44

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

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 4853

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcCot[c*x])^p)/(d*(m + 1)), x] + Dist[(b*c*p
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcCot[c*x])^(p - 1))/(1 + c^2*x^2
), x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[p, 0] && (EqQ[p, 1] || Integ
erQ[m]) && NeQ[m, -1]
```

Rubi steps

$$\begin{aligned}
\int \frac{\cot^{-1}(ax)}{x^4}\,dx &= -\frac{\cot^{-1}(ax)}{3x^3}-\frac{1}{3}a\int \frac{1}{x^3\left(1+a^2x^2\right)}\,dx\\
&= -\frac{\cot^{-1}(ax)}{3x^3}-\frac{1}{6}a\,\text{Subst}\left(\int \frac{1}{x^2\left(1+a^2x\right)}\,dx,x,x^2\right)\\
&= -\frac{\cot^{-1}(ax)}{3x^3}-\frac{1}{6}a\,\text{Subst}\left(\int \left(\frac{1}{x^2}-\frac{a^2}{x}+\frac{a^4}{1+a^2x}\right)dx,x,x^2\right)\\
&= \frac{a}{6x^2}-\frac{\cot^{-1}(ax)}{3x^3}+\frac{1}{3}a^3\log(x)-\frac{1}{6}a^3\log\left(1+a^2x^2\right)
\end{aligned}$$

Mathematica [A] time = 0.01, size = 44, normalized size = 0.96

$$-\frac{1}{6}a\left(a^2\log\left(a^2x^2+1\right)-2a^2\log(x)-\frac{1}{x^2}\right)-\frac{\cot^{-1}(ax)}{3x^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcCot[a*x]/x^4,x]
```

```
[Out] -1/3*ArcCot[a*x]/x^3 - (a*(-x^(-2) - 2*a^2*Log[x] + a^2*Log[1 + a^2*x^2]))/
6
```

fricas [A] time = 0.62, size = 43, normalized size = 0.93

$$-\frac{a^3x^3\log\left(a^2x^2+1\right)-2\,a^3x^3\log(x)-ax+2\,\operatorname{arccot}(ax)}{6\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(a*x)/x^4,x, algorithm="fricas")
```

```
[Out] -1/6*(a^3*x^3*log(a^2*x^2 + 1) - 2*a^3*x^3*log(x) - a*x + 2*arccot(a*x))/x^
3
```

giac [A] time = 0.13, size = 44, normalized size = 0.96

$$\frac{1}{6}\left(a^2\left(\frac{1}{a^2x^2}-\log\left(\frac{1}{a^2x^2}+1\right)\right)-\frac{2\,\arctan\left(\frac{1}{ax}\right)}{ax^3}\right)a$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(a*x)/x^4,x, algorithm="giac")
```

```
[Out] 1/6*(a^2*(1/(a^2*x^2) - log(1/(a^2*x^2) + 1)) - 2*arctan(1/(a*x))/(a*x^3))*
a
```

maple [A] time = 0.04, size = 41, normalized size = 0.89

$$-\frac{\operatorname{arccot}(ax)}{3x^3}+\frac{a}{6x^2}+\frac{a^3\ln(ax)}{3}-\frac{a^3\ln\left(a^2x^2+1\right)}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arccot(a*x)/x^4,x)
```

```
[Out] -1/3*arccot(a*x)/x^3+1/6*a/x^2+1/3*a^3*ln(a*x)-1/6*a^3*ln(a^2*x^2+1)
```

maxima [A] time = 0.31, size = 42, normalized size = 0.91

$$-\frac{1}{6}\left(a^2\log\left(a^2x^2+1\right)-a^2\log\left(x^2\right)-\frac{1}{x^2}\right)a-\frac{\operatorname{arccot}(ax)}{3\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(a*x)/x^4,x, algorithm="maxima")
```

```
[Out] -1/6*(a^2*log(a^2*x^2 + 1) - a^2*log(x^2) - 1/x^2)*a - 1/3*arccot(a*x)/x^3
```

mupad [B] time = 0.85, size = 58, normalized size = 1.26

$$\begin{cases} -\frac{\pi}{6\,x^3} & \text{if } a=0 \\ \frac{a^4\,\ln(x)-\frac{a^4\,\ln\left(a^2\,x^2+1\right)}{2}+\frac{a^2}{2\,x^2}}{3\,a}-\frac{\operatorname{acot}(a\,x)}{3\,x^3} & \text{if } a\neq 0 \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(acot(a*x)/x^4,x)
```

```
[Out] piecewise(a == 0, -pi/(6*x^3), a ~= 0, (a^4*log(x) - (a^4*log(a^2*x^2 + 1))
/2 + a^2/(2*x^2))/(3*a) - acot(a*x)/(3*x^3))
```

sympy [A] time = 0.59, size = 39, normalized size = 0.85

$$\frac{a^3\log(x)}{3} - \frac{a^3\log\left(a^2x^2+1\right)}{6} + \frac{a}{6x^2} - \frac{\operatorname{acot}(ax)}{3x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(acot(a*x)/x**4,x)
```

```
[Out] a**3*log(x)/3 - a**3*log(a**2*x**2 + 1)/6 + a/(6*x**2) - acot(a*x)/(3*x**3)
```

3.11 $\int \frac{\cot^{-1}(ax)}{x^5} dx$

Optimal. Leaf size=41

$$-\frac{1}{4}a^4\tan^{-1}(ax)-\frac{a^3}{4x}-\frac{\cot^{-1}(ax)}{4x^4}+\frac{a}{12x^3}$$

```
[Out] 1/12*a/x^3-1/4*a^3/x-1/4*arccot(a*x)/x^4-1/4*a^4*arctan(a*x)
```

Rubi [A] time = 0.02, antiderivative size = 41, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 8, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.375, Rules used = {4853, 325, 203}

$$-\frac{a^3}{4x}-\frac{1}{4}a^4\tan^{-1}(ax)+\frac{a}{12x^3}-\frac{\cot^{-1}(ax)}{4x^4}$$

Antiderivative was successfully verified.

```
[In] Int[ArcCot[a*x]/x^5,x]
```

```
[Out] a/(12*x^3) - a^3/(4*x) - ArcCot[a*x]/(4*x^4) - (a^4*ArcTan[a*x])/4
```

Rule 203

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

Rule 325

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

Rule 4853

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcCot[c*x])^p)/(d*(m + 1)), x] + Dist[(b*c*p
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcCot[c*x])^(p - 1))/(1 + c^2*x^2
), x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[p, 0] && (EqQ[p, 1] || Integ
erQ[m]) && NeQ[m, -1]
```

Rubi steps

$$\begin{aligned}
\int \frac{\cot^{-1}(ax)}{x^5} dx &= -\frac{\cot^{-1}(ax)}{4x^4}-\frac{1}{4}a\int \frac{1}{x^4\left(1+a^2x^2\right)} dx\\
&= \frac{a}{12x^3}-\frac{\cot^{-1}(ax)}{4x^4}+\frac{1}{4}a^3\int \frac{1}{x^2\left(1+a^2x^2\right)} dx\\
&= \frac{a}{12x^3}-\frac{a^3}{4x}-\frac{\cot^{-1}(ax)}{4x^4}-\frac{1}{4}a^5\int \frac{1}{1+a^2x^2} dx\\
&= \frac{a}{12x^3}-\frac{a^3}{4x}-\frac{\cot^{-1}(ax)}{4x^4}-\frac{1}{4}a^4\tan^{-1}(ax)
\end{aligned}$$

Mathematica [C] time = 0.00, size = 36, normalized size = 0.88

$$\frac{a\,_2F_1\left(-\frac{3}{2},1;-\frac{1}{2};-a^2x^2\right)}{12x^3}-\frac{\cot^{-1}(ax)}{4x^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcCot[a*x]/x^5,x]
```

```
[Out] -1/4*ArcCot[a*x]/x^4 + (a*Hypergeometric2F1[-3/2, 1, -1/2, -(a^2*x^2)])/(12
*x^3)
```

fricas [A] time = 0.70, size = 33, normalized size = 0.80

$$-\frac{3\,a^3x^3-ax-3\left(a^4x^4-1\right)\operatorname{arccot}\left(ax\right)}{12\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(a*x)/x^5,x, algorithm="fricas")
```

```
[Out] -1/12*(3*a^3*x^3 - a*x - 3*(a^4*x^4 - 1)*arccot(a*x))/x^4
```

giac [A] time = 0.11, size = 51, normalized size = 1.24

$$-\frac{1}{12}\left(a^3\left(\frac{3}{ax}-\frac{1}{a^3x^3}-3\,\arctan\left(\frac{1}{ax}\right)\right)+\frac{3\,\arctan\left(\frac{1}{ax}\right)}{ax^4}\right)a$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(a*x)/x^5,x, algorithm="giac")
```

```
[Out] -1/12*(a^3*(3/(a*x) - 1/(a^3*x^3) - 3*arctan(1/(a*x))) + 3*arctan(1/(a*x))/
(a*x^4))*a
```

maple [A] time = 0.04, size = 34, normalized size = 0.83

$$\frac{a}{12x^3}-\frac{a^3}{4x}-\frac{\operatorname{arccot}\left(ax\right)}{4x^4}-\frac{a^4\arctan\left(ax\right)}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arccot(a*x)/x^5,x)
```

```
[Out] 1/12*a/x^3-1/4*a^3/x-1/4*arccot(a*x)/x^4-1/4*a^4*arctan(a*x)
```

maxima [A] time = 0.41, size = 37, normalized size = 0.90

$$-\frac{1}{12}\left(3\,a^3\arctan\left(ax\right)+\frac{3\,a^2x^2-1}{x^3}\right)a-\frac{\operatorname{arccot}\left(ax\right)}{4\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(a*x)/x^5,x, algorithm="maxima")
```

```
[Out] -1/12*(3*a^3*arctan(a*x) + (3*a^2*x^2 - 1)/x^3)*a - 1/4*arccot(a*x)/x^4
```

mupad [B] time = 0.70, size = 47, normalized size = 1.15

$$\begin{cases} -\frac{\pi}{8\,x^4} & \text{if } a=0 \\ -\frac{a^4\operatorname{atan}(a\,x)}{4}-\frac{\frac{\operatorname{acot}(a\,x)}{4}-\frac{a\,x}{12}+\frac{a^3\,x^3}{4}}{x^4} & \text{if } a\neq 0 \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(acot(a*x)/x^5,x)
```

```
[Out] piecewise(a == 0, -pi/(8*x^4), a ~= 0, - (a^4*atan(a*x))/4 - (acot(a*x)/4 -
 (a*x)/12 + (a^3*x^3)/4)/x^4)
```

sympy **[A]** time = 0.75, size = 32, normalized size = 0.78

$$\frac{a^4 \operatorname{acot}(ax)}{4} - \frac{a^3}{4x} + \frac{a}{12x^3} - \frac{\operatorname{acot}(ax)}{4x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(acot(a*x)/x**5,x)
```

```
[Out] a**4*acot(a*x)/4 - a**3/(4*x) + a/(12*x**3) - acot(a*x)/(4*x**4)
```

3.12 $\int x^5 \cot^{-1}(ax)^2 \, dx$

Optimal. Leaf size=104

$$\frac{\cot^{-1}(ax)^2}{6a^6}+\frac{x\cot^{-1}(ax)}{3a^5}-\frac{4x^2}{45a^4}-\frac{x^3\cot^{-1}(ax)}{9a^3}+\frac{x^4}{60a^2}+\frac{23\log\left(a^2x^2+1\right)}{90a^6}+\frac{1}{6}x^6\cot^{-1}(ax)^2+\frac{x^5\cot^{-1}(ax)}{15a}$$

```
[Out] -4/45*x^2/a^4+1/60*x^4/a^2+1/3*x*arccot(a*x)/a^5-1/9*x^3*arccot(a*x)/a^3+1/
15*x^5*arccot(a*x)/a+1/6*arccot(a*x)^2/a^6+1/6*x^6*arccot(a*x)^2+23/90*ln(a
^2*x^2+1)/a^6
```

Rubi [A] time = 0.22, antiderivative size = 104, normalized size of antiderivative = 1.00, number of steps used = 15, number of rules used = 7, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.700, Rules used = {4853, 4917, 266, 43, 4847, 260, 4885}

$$\frac{x^4}{60a^2}-\frac{4x^2}{45a^4}+\frac{23\log\left(a^2x^2+1\right)}{90a^6}-\frac{x^3\cot^{-1}(ax)}{9a^3}+\frac{x\cot^{-1}(ax)}{3a^5}+\frac{\cot^{-1}(ax)^2}{6a^6}+\frac{1}{6}x^6\cot^{-1}(ax)^2+\frac{x^5\cot^{-1}(ax)}{15a}$$

Antiderivative was successfully verified.

```
[In] Int[x^5*ArcCot[a*x]^2,x]
```

```
[Out] (-4*x^2)/(45*a^4) + x^4/(60*a^2) + (x*ArcCot[a*x])/(3*a^5) - (x^3*ArcCot[a*
x])/(9*a^3) + (x^5*ArcCot[a*x])/(15*a) + ArcCot[a*x]^2/(6*a^6) + (x^6*ArcCo
t[a*x]^2)/6 + (23*Log[1 + a^2*x^2])/(90*a^6)
```

Rule 43

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

Rule 260

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

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 4847

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b*Ar
cCot[c*x])^p, x] + Dist[b*c*p, Int[(x*(a + b*ArcCot[c*x])^(p - 1))/(1 + c^2
*x^2), x], x] /; FreeQ[{a, b, c}, x] && IGtQ[p, 0]
```

Rule 4853

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcCot[c*x])^p)/(d*(m + 1)), x] + Dist[(b*c*p
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcCot[c*x])^(p - 1))/(1 + c^2*x^2
), x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[p, 0] && (EqQ[p, 1] || Integ
erQ[m]) && NeQ[m, -1]
```

Rule 4885

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)^2), x_Symbo
l] :> -Simp[(a + b*ArcCot[c*x])^(p + 1)/(b*c*d*(p + 1)), x] /; FreeQ[{a, b,
 c, d, e, p}, x] && EqQ[e, c^2*d] && NeQ[p, -1]
```

Rule 4917

```
Int[(((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)*((f_.)*(x_))^(m_))/((d_) + (e
_.)*(x_)^2), x_Symbol] :> Dist[f^2/e, Int[(f*x)^(m - 2)*(a + b*ArcCot[c*x])
^p, x], x] - Dist[(d*f^2)/e, Int[((f*x)^(m - 2)*(a + b*ArcCot[c*x])^p)/(d +
 e*x^2), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && GtQ[p, 0] && GtQ[m, 1]
```

Rubi steps

$$\int x^5 \cot^{-1}(ax)^2\,dx = \frac{1}{6}x^6\cot^{-1}(ax)^2 + \frac{1}{3}a\int \frac{x^6\cot^{-1}(ax)}{1+a^2x^2}\,dx$$
$$= \frac{1}{6}x^6\cot^{-1}(ax)^2 + \frac{\int x^4\cot^{-1}(ax)\,dx}{3a} - \frac{\int \frac{x^4\cot^{-1}(ax)}{1+a^2x^2}\,dx}{3a}$$
$$= \frac{x^5\cot^{-1}(ax)}{15a} + \frac{1}{6}x^6\cot^{-1}(ax)^2 + \frac{1}{15}\int \frac{x^5}{1+a^2x^2}\,dx - \frac{\int x^2\cot^{-1}(ax)\,dx}{3a^3} + \frac{\int \frac{x^2\cot^{-1}(ax)}{1+a^2x^2}\,d}{3a^3}$$
$$= -\frac{x^3\cot^{-1}(ax)}{9a^3} + \frac{x^5\cot^{-1}(ax)}{15a} + \frac{1}{6}x^6\cot^{-1}(ax)^2 + \frac{1}{30}\,\text{Subst}\left(\int \frac{x^2}{1+a^2x}\,dx, x, x^2\right) + \frac{\int c}{}$$
$$= \frac{x\cot^{-1}(ax)}{3a^5} - \frac{x^3\cot^{-1}(ax)}{9a^3} + \frac{x^5\cot^{-1}(ax)}{15a} + \frac{\cot^{-1}(ax)^2}{6a^6} + \frac{1}{6}x^6\cot^{-1}(ax)^2 + \frac{1}{30}\,\text{Subst}\Bigg(\int$$
$$= -\frac{x^2}{30a^4} + \frac{x^4}{60a^2} + \frac{x\cot^{-1}(ax)}{3a^5} - \frac{x^3\cot^{-1}(ax)}{9a^3} + \frac{x^5\cot^{-1}(ax)}{15a} + \frac{\cot^{-1}(ax)^2}{6a^6} + \frac{1}{6}x^6\cot^{-1}(a$$
$$= -\frac{4x^2}{45a^4} + \frac{x^4}{60a^2} + \frac{x\cot^{-1}(ax)}{3a^5} - \frac{x^3\cot^{-1}(ax)}{9a^3} + \frac{x^5\cot^{-1}(ax)}{15a} + \frac{\cot^{-1}(ax)^2}{6a^6} + \frac{1}{6}x^6\cot^{-1}(a$$

Mathematica [A] time = 0.03, size = 79, normalized size = 0.76

$$\frac{30\left(a^6x^6+1\right)\cot^{-1}(ax)^2 + 3a^4x^4 - 16a^2x^2 + 46\log\left(a^2x^2+1\right) + 4ax\left(3a^4x^4 - 5a^2x^2 + 15\right)\cot^{-1}(ax)}{180a^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^5*ArcCot[a*x]^2,x]
```

```
[Out] (-16*a^2*x^2 + 3*a^4*x^4 + 4*a*x*(15 - 5*a^2*x^2 + 3*a^4*x^4)*ArcCot[a*x] +
 30*(1 + a^6*x^6)*ArcCot[a*x]^2 + 46*Log[1 + a^2*x^2])/(180*a^6)
```

fricas [A] time = 0.61, size = 78, normalized size = 0.75

$$\frac{3\,a^4x^4 - 16\,a^2x^2 + 30\left(a^6x^6+1\right)\operatorname{arccot}(ax)^2 + 4\left(3\,a^5x^5 - 5\,a^3x^3 + 15\,ax\right)\operatorname{arccot}(ax) + 46\,\log\left(a^2x^2+1\right)}{180\,a^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*arccot(a*x)^2,x, algorithm="fricas")
```

```
[Out] 1/180*(3*a^4*x^4 - 16*a^2*x^2 + 30*(a^6*x^6 + 1)*arccot(a*x)^2 + 4*(3*a^5*x
^5 - 5*a^3*x^3 + 15*a*x)*arccot(a*x) + 46*log(a^2*x^2 + 1))/a^6
```

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

$$\int x^5 \operatorname{arccot}(ax)^2\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*arccot(a*x)^2,x, algorithm="giac")
```

```
[Out] integrate(x^5*arccot(a*x)^2, x)
```

maple [A] time = 0.05, size = 102, normalized size = 0.98

$$\frac{x^6 \operatorname{arccot}(ax)^2}{6}+\frac{x^5 \operatorname{arccot}(ax)}{15a}-\frac{x^3 \operatorname{arccot}(ax)}{9a^3}+\frac{x \operatorname{arccot}(ax)}{3a^5}-\frac{\operatorname{arccot}(ax)\arctan(ax)}{3a^6}+\frac{x^4}{60a^2}-\frac{4x^2}{45a^4}+\frac{23\ln\left(a^2x^2\right.}{90a^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^5*arccot(a*x)^2,x)
```

```
[Out] 1/6*x^6*arccot(a*x)^2+1/15*x^5*arccot(a*x)/a-1/9*x^3*arccot(a*x)/a^3+1/3*x*
arccot(a*x)/a^5-1/3/a^6*arccot(a*x)*arctan(a*x)+1/60*x^4/a^2-4/45*x^2/a^4+2
3/90*ln(a^2*x^2+1)/a^6-1/6/a^6*arctan(a*x)^2
```

maxima [A] time = 0.43, size = 95, normalized size = 0.91

$$\frac{1}{6}x^6 \operatorname{arccot}(ax)^2+\frac{1}{45}a\left(\frac{3a^4x^5-5a^2x^3+15x}{a^6}-\frac{15\arctan(ax)}{a^7}\right)\operatorname{arccot}(ax)+\frac{3a^4x^4-16a^2x^2-30\arctan(ax)^2}{180a^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*arccot(a*x)^2,x, algorithm="maxima")
```

```
[Out] 1/6*x^6*arccot(a*x)^2 + 1/45*a*((3*a^4*x^5 - 5*a^2*x^3 + 15*x)/a^6 - 15*arc
tan(a*x)/a^7)*arccot(a*x) + 1/180*(3*a^4*x^4 - 16*a^2*x^2 - 30*arctan(a*x)^
2 + 46*log(a^2*x^2 + 1))/a^6
```

mupad [B] time = 0.81, size = 85, normalized size = 0.82

$$\frac{x^6 \operatorname{acot}(a\,x)^2}{6}+\frac{\frac{23\ln\left(a^2x^2+1\right)}{90}-\frac{4a^2x^2}{45}+\frac{a^4x^4}{60}+\frac{\operatorname{acot}(a\,x)^2}{6}-\frac{a^3x^3\operatorname{acot}(a\,x)}{9}+\frac{a^5x^5\operatorname{acot}(a\,x)}{15}+\frac{a\,x\operatorname{acot}(a\,x)}{3}}{a^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^5*acot(a*x)^2,x)
```

```
[Out] (x^6*acot(a*x)^2)/6 + ((23*log(a^2*x^2 + 1))/90 - (4*a^2*x^2)/45 + (a^4*x^4
)/60 + acot(a*x)^2/6 - (a^3*x^3*acot(a*x))/9 + (a^5*x^5*acot(a*x))/15 + (a*
x*acot(a*x))/3)/a^6
```

sympy [A] time = 1.76, size = 104, normalized size = 1.00

$$\begin{cases} \frac{x^6 \operatorname{acot}^2(ax)}{6}+\frac{x^5\operatorname{acot}(ax)}{15a}+\frac{x^4}{60a^2}-\frac{x^3\operatorname{acot}(ax)}{9a^3}-\frac{4x^2}{45a^4}+\frac{x\operatorname{acot}(ax)}{3a^5}+\frac{23\log\left(a^2x^2+1\right)}{90a^6}+\frac{\operatorname{acot}^2(ax)}{6a^6} & \text{for } a\neq 0 \\ \frac{\pi^2x^6}{24} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**5*acot(a*x)**2,x)
```

```
[Out] Piecewise((x**6*acot(a*x)**2/6 + x**5*acot(a*x)/(15*a) + x**4/(60*a**2) - x
**3*acot(a*x)/(9*a**3) - 4*x**2/(45*a**4) + x*acot(a*x)/(3*a**5) + 23*log(a
**2*x**2 + 1)/(90*a**6) + acot(a*x)**2/(6*a**6), Ne(a, 0)), (pi**2*x**6/24,
 True))
```

3.13 $\int x^4 \cot^{-1}(ax)^2 \, dx$

Optimal. Leaf size=135

$$\frac{i\text{Li}_2\left(1-\frac{2}{iax+1}\right)}{5a^5}+\frac{3\tan^{-1}(ax)}{10a^5}+\frac{i\cot^{-1}(ax)^2}{5a^5}-\frac{2\log\left(\frac{2}{1+iax}\right)\cot^{-1}(ax)}{5a^5}-\frac{3x}{10a^4}-\frac{x^2\cot^{-1}(ax)}{5a^3}+\frac{x^3}{30a^2}+\frac{1}{5}x^5\cot^{-1}(ax$$

```
[Out] -3/10*x/a^4+1/30*x^3/a^2-1/5*x^2*arccot(a*x)/a^3+1/10*x^4*arccot(a*x)/a+1/5
*I*arccot(a*x)^2/a^5+1/5*x^5*arccot(a*x)^2+3/10*arctan(a*x)/a^5-2/5*arccot(
a*x)*ln(2/(1+I*a*x))/a^5+1/5*I*polylog(2,1-2/(1+I*a*x))/a^5
```

Rubi [A] time = 0.21, antiderivative size = 135, normalized size of antiderivative = 1.00, number of steps used = 14, number of rules used = 9, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}} = 0.900$, Rules used = {4853, 4917, 302, 203, 321, 4921, 4855, 2402, 2315}

$$\frac{i\text{PolyLog}\left(2,1-\frac{2}{1+iax}\right)}{5a^5}+\frac{x^3}{30a^2}-\frac{x^2\cot^{-1}(ax)}{5a^3}-\frac{3x}{10a^4}+\frac{3\tan^{-1}(ax)}{10a^5}+\frac{i\cot^{-1}(ax)^2}{5a^5}-\frac{2\log\left(\frac{2}{1+iax}\right)\cot^{-1}(ax)}{5a^5}+\frac{1}{5}x^5$$

Antiderivative was successfully verified.

```
[In] Int[x^4*ArcCot[a*x]^2,x]
```

```
[Out] (-3*x)/(10*a^4) + x^3/(30*a^2) - (x^2*ArcCot[a*x])/(5*a^3) + (x^4*ArcCot[a*
x])/(10*a) + ((I/5)*ArcCot[a*x]^2)/a^5 + (x^5*ArcCot[a*x]^2)/5 + (3*ArcTan[
a*x])/(10*a^5) - (2*ArcCot[a*x]*Log[2/(1 + I*a*x)])/(5*a^5) + ((I/5)*PolyLo
g[2, 1 - 2/(1 + I*a*x)])/a^5
```

Rule 203

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

Rule 302

```
Int[(x_)^(m_)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Int[PolynomialDivide[x
^m, a + b*x^n, x], x] /; FreeQ[{a, b}, x] && IGtQ[m, 0] && IGtQ[n, 0] && Gt
Q[m, 2*n - 1]
```

Rule 321

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

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2402

```
Int[Log[(c_.)/((d_) + (e_.)*(x_))]/((f_) + (g_.)*(x_)^2), x_Symbol] :> -Dis
t[e/g, Subst[Int[Log[2*d*x]/(1 - 2*d*x), x], x, 1/(d + e*x)], x] /; FreeQ[{
c, d, e, f, g}, x] && EqQ[c, 2*d] && EqQ[e^2*f + d^2*g, 0]
```

Rule 4853

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcCot[c*x])^p)/(d*(m + 1)), x] + Dist[(b*c*p
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcCot[c*x])^(p - 1))/(1 + c^2*x^2
), x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[p, 0] && (EqQ[p, 1] || Integ
erQ[m]) && NeQ[m, -1]
```

Rule 4855

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symbol]
 :> -Simp[((a + b*ArcCot[c*x])^p*Log[2/(1 + (e*x)/d)])/e, x] - Dist[(b*c*p)
/e, Int[((a + b*ArcCot[c*x])^(p - 1)*Log[2/(1 + (e*x)/d)])/(1 + c^2*x^2), x
], x] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[p, 0] && EqQ[c^2*d^2 + e^2, 0]
```

Rule 4917

```
Int[(((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)*((f_.)*(x_))^(m_))/((d_) + (e
_.)*(x_)^2), x_Symbol] :> Dist[f^2/e, Int[(f*x)^(m - 2)*(a + b*ArcCot[c*x])
^p, x], x] - Dist[(d*f^2)/e, Int[((f*x)^(m - 2)*(a + b*ArcCot[c*x])^p)/(d +
 e*x^2), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && GtQ[p, 0] && GtQ[m, 1]
```

Rule 4921

```
Int[(((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)*(x_))/((d_) + (e_.)*(x_)^2),
x_Symbol] :> Simp[(I*(a + b*ArcCot[c*x])^(p + 1))/(b*e*(p + 1)), x] - Dist[
1/(c*d), Int[(a + b*ArcCot[c*x])^p/(I - c*x), x], x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[e, c^2*d] && IGtQ[p, 0]
```

Rubi steps

$$\int x^4 \cot^{-1}(ax)^2\,dx = \frac{1}{5}x^5\cot^{-1}(ax)^2 + \frac{1}{5}(2a)\int \frac{x^5\cot^{-1}(ax)}{1+a^2x^2}\,dx$$
$$= \frac{1}{5}x^5\cot^{-1}(ax)^2 + \frac{2\int x^3\cot^{-1}(ax)\,dx}{5a} - \frac{2\int \frac{x^3\cot^{-1}(ax)}{1+a^2x^2}\,dx}{5a}$$
$$= \frac{x^4\cot^{-1}(ax)}{10a} + \frac{1}{5}x^5\cot^{-1}(ax)^2 + \frac{1}{10}\int \frac{x^4}{1+a^2x^2}\,dx - \frac{2\int x\cot^{-1}(ax)\,dx}{5a^3} + \frac{2\int \frac{x\cot^{-1}(ax)}{1+a^2x^2}\,dx}{5a^3}$$
$$= -\frac{x^2\cot^{-1}(ax)}{5a^3} + \frac{x^4\cot^{-1}(ax)}{10a} + \frac{i\cot^{-1}(ax)^2}{5a^5} + \frac{1}{5}x^5\cot^{-1}(ax)^2 + \frac{1}{10}\int\left(-\frac{1}{a^4} + \frac{x^2}{a^2} + \frac{}{a^4\left(1-\right.}\right.$$
$$= -\frac{3x}{10a^4} + \frac{x^3}{30a^2} - \frac{x^2\cot^{-1}(ax)}{5a^3} + \frac{x^4\cot^{-1}(ax)}{10a} + \frac{i\cot^{-1}(ax)^2}{5a^5} + \frac{1}{5}x^5\cot^{-1}(ax)^2 - \frac{2\cot^{-1}(ax}{5}$$
$$= -\frac{3x}{10a^4} + \frac{x^3}{30a^2} - \frac{x^2\cot^{-1}(ax)}{5a^3} + \frac{x^4\cot^{-1}(ax)}{10a} + \frac{i\cot^{-1}(ax)^2}{5a^5} + \frac{1}{5}x^5\cot^{-1}(ax)^2 + \frac{3\tan^{-1}(ax}{10a^5}$$
$$= -\frac{3x}{10a^4} + \frac{x^3}{30a^2} - \frac{x^2\cot^{-1}(ax)}{5a^3} + \frac{x^4\cot^{-1}(ax)}{10a} + \frac{i\cot^{-1}(ax)^2}{5a^5} + \frac{1}{5}x^5\cot^{-1}(ax)^2 + \frac{3\tan^{-1}(ax}{10a^5}$$

Mathematica [A] time = 0.55, size = 95, normalized size = 0.70

$$\frac{6\left(a^5x^5+i\right)\cot^{-1}(ax)^2 + ax\left(a^2x^2-9\right) + 3\cot^{-1}(ax)\left(a^4x^4-2a^2x^2-4\log\left(1-e^{2i\cot^{-1}(ax)}\right)-3\right) + 6i\text{Li}_2\left(e^{2i\cot^{-1}(a}\right.}{30a^5}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[x^4*ArcCot[a*x]^2,x]
```

```
[Out] (a*x*(-9 + a^2*x^2) + 6*(I + a^5*x^5)*ArcCot[a*x]^2 + 3*ArcCot[a*x]*(-3 - 2
*a^2*x^2 + a^4*x^4 - 4*Log[1 - E^((2*I)*ArcCot[a*x])]) + (6*I)*PolyLog[2, E
^((2*I)*ArcCot[a*x])])/(30*a^5)
```

fricas [F] time = 0.65, size = 0, normalized size = 0.00

$$\text{integral}\left(x^4 \operatorname{arccot}(ax)^2, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*arccot(a*x)^2,x, algorithm="fricas")
```

```
[Out] integral(x^4*arccot(a*x)^2, x)
```

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

$$\int x^4 \operatorname{arccot}(ax)^2 \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*arccot(a*x)^2,x, algorithm="giac")
```

```
[Out] integrate(x^4*arccot(a*x)^2, x)
```

maple [B] time = 0.14, size = 233, normalized size = 1.73

$$\frac{x^5 \operatorname{arccot}(ax)^2}{5} + \frac{x^4 \operatorname{arccot}(ax)}{10a} - \frac{x^2 \operatorname{arccot}(ax)}{5a^3} + \frac{\operatorname{arccot}(ax) \ln\left(a^2x^2+1\right)}{5a^5} + \frac{x^3}{30a^2} - \frac{3x}{10a^4} + \frac{3 \arctan(ax)}{10a^5} - \frac{i \ln(ax}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*arccot(a*x)^2,x)
```

```
[Out] 1/5*x^5*arccot(a*x)^2+1/10*x^4*arccot(a*x)/a-1/5*x^2*arccot(a*x)/a^3+1/5/a^
5*arccot(a*x)*ln(a^2*x^2+1)+1/30*x^3/a^2-3/10*x/a^4+3/10*arctan(a*x)/a^5-1/
10*I/a^5*ln(a*x-I)*ln(a^2*x^2+1)+1/20*I/a^5*ln(a*x-I)^2+1/10*I/a^5*dilog(-1
/2*I*(I+a*x))+1/10*I/a^5*ln(a*x-I)*ln(-1/2*I*(I+a*x))+1/10*I/a^5*ln(I+a*x)*
ln(a^2*x^2+1)-1/20*I/a^5*ln(I+a*x)^2-1/10*I/a^5*dilog(1/2*I*(a*x-I))-1/10*I
/a^5*ln(I+a*x)*ln(1/2*I*(a*x-I))
```

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

$$\frac{1}{20} x^5 \arctan(1, ax)^2 - \frac{1}{80} x^5 \log\left(a^2x^2+1\right)^2 + \int \frac{60 a^2x^6 \arctan(1, ax)^2 + 4 a^2x^6 \log\left(a^2x^2+1\right) + 8 ax^5 \arctan}{80 \left(a^2x\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*arccot(a*x)^2,x, algorithm="maxima")
```

```
[Out] 1/20*x^5*arctan2(1, a*x)^2 - 1/80*x^5*log(a^2*x^2 + 1)^2 + integrate(1/80*(
60*a^2*x^6*arctan2(1, a*x)^2 + 4*a^2*x^6*log(a^2*x^2 + 1) + 8*a*x^5*arctan2
(1, a*x) + 60*x^4*arctan2(1, a*x)^2 + 5*(a^2*x^6 + x^4)*log(a^2*x^2 + 1)^2)
/(a^2*x^2 + 1), x)
```

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

$$\int x^4 \operatorname{acot}(a\,x)^2 \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*acot(a*x)^2,x)
```

```
[Out] int(x^4*acot(a*x)^2, x)
```

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

$$\int x^4 \operatorname{acot}^2(ax)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*acot(a*x)**2,x)
```

```
[Out] Integral(x**4*acot(a*x)**2, x)
```

3.14 $\int x^3 \cot^{-1}(ax)^2 \, dx$

Optimal. Leaf size=80

$$-\frac{\cot^{-1}(ax)^2}{4a^4}-\frac{x\cot^{-1}(ax)}{2a^3}+\frac{x^2}{12a^2}-\frac{\log\left(a^2x^2+1\right)}{3a^4}+\frac{1}{4}x^4\cot^{-1}(ax)^2+\frac{x^3\cot^{-1}(ax)}{6a}$$

```
[Out] 1/12*x^2/a^2-1/2*x*arccot(a*x)/a^3+1/6*x^3*arccot(a*x)/a-1/4*arccot(a*x)^2/
a^4+1/4*x^4*arccot(a*x)^2-1/3*ln(a^2*x^2+1)/a^4
```

Rubi [A] time = 0.15, antiderivative size = 80, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 7, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.700, Rules used = {4853, 4917, 266, 43, 4847, 260, 4885}

$$\frac{x^2}{12a^2}-\frac{\log\left(a^2x^2+1\right)}{3a^4}-\frac{x\cot^{-1}(ax)}{2a^3}-\frac{\cot^{-1}(ax)^2}{4a^4}+\frac{1}{4}x^4\cot^{-1}(ax)^2+\frac{x^3\cot^{-1}(ax)}{6a}$$

Antiderivative was successfully verified.

```
[In] Int[x^3*ArcCot[a*x]^2,x]
```

```
[Out] x^2/(12*a^2) - (x*ArcCot[a*x])/(2*a^3) + (x^3*ArcCot[a*x])/(6*a) - ArcCot[a
*x]^2/(4*a^4) + (x^4*ArcCot[a*x]^2)/4 - Log[1 + a^2*x^2]/(3*a^4)
```

Rule 43

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

Rule 260

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

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 4847

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b*Ar
cCot[c*x])^p, x] + Dist[b*c*p, Int[(x*(a + b*ArcCot[c*x])^(p - 1))/(1 + c^2
*x^2), x], x] /; FreeQ[{a, b, c}, x] && IGtQ[p, 0]
```

Rule 4853

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcCot[c*x])^p)/(d*(m + 1)), x] + Dist[(b*c*p
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcCot[c*x])^(p - 1))/(1 + c^2*x^2
), x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[p, 0] && (EqQ[p, 1] || Integ
erQ[m]) && NeQ[m, -1]
```

Rule 4885

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)^2), x_Symbo
l] :> -Simp[(a + b*ArcCot[c*x])^(p + 1)/(b*c*d*(p + 1)), x] /; FreeQ[{a, b,
```

```
c, d, e, p}, x] && EqQ[e, c^2*d] && NeQ[p, -1]
```

Rule 4917

```
Int[(((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)*((f_.)*(x_))^(m_))/((d_) + (e
_.)*(x_)^2), x_Symbol] :> Dist[f^2/e, Int[(f*x)^(m - 2)*(a + b*ArcCot[c*x])
^p, x], x] - Dist[(d*f^2)/e, Int[((f*x)^(m - 2)*(a + b*ArcCot[c*x])^p)/(d +
 e*x^2), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && GtQ[p, 0] && GtQ[m, 1]
```

Rubi steps

$$\begin{aligned}
\int x^3 \cot^{-1}(ax)^2\,dx &= \frac{1}{4}x^4\cot^{-1}(ax)^2 + \frac{1}{2}a\int \frac{x^4\cot^{-1}(ax)}{1+a^2x^2}\,dx \\
&= \frac{1}{4}x^4\cot^{-1}(ax)^2 + \frac{\int x^2\cot^{-1}(ax)\,dx}{2a} - \frac{\int \frac{x^2\cot^{-1}(ax)}{1+a^2x^2}\,dx}{2a} \\
&= \frac{x^3\cot^{-1}(ax)}{6a} + \frac{1}{4}x^4\cot^{-1}(ax)^2 + \frac{1}{6}\int \frac{x^3}{1+a^2x^2}\,dx - \frac{\int \cot^{-1}(ax)\,dx}{2a^3} + \frac{\int \frac{\cot^{-1}(ax)}{1+a^2x^2}\,dx}{2a^3} \\
&= -\frac{x\cot^{-1}(ax)}{2a^3} + \frac{x^3\cot^{-1}(ax)}{6a} - \frac{\cot^{-1}(ax)^2}{4a^4} + \frac{1}{4}x^4\cot^{-1}(ax)^2 + \frac{1}{12}\operatorname{Subst}\left(\int \frac{x}{1+a^2x}\,dx, x, x\right. \\
&= -\frac{x\cot^{-1}(ax)}{2a^3} + \frac{x^3\cot^{-1}(ax)}{6a} - \frac{\cot^{-1}(ax)^2}{4a^4} + \frac{1}{4}x^4\cot^{-1}(ax)^2 - \frac{\log\left(1+a^2x^2\right)}{4a^4} + \frac{1}{12}\operatorname{Subst}\Bigg(\\
&= \frac{x^2}{12a^2} - \frac{x\cot^{-1}(ax)}{2a^3} + \frac{x^3\cot^{-1}(ax)}{6a} - \frac{\cot^{-1}(ax)^2}{4a^4} + \frac{1}{4}x^4\cot^{-1}(ax)^2 - \frac{\log\left(1+a^2x^2\right)}{3a^4}
\end{aligned}$$

Mathematica [A] time = 0.02, size = 61, normalized size = 0.76

$$\frac{3\left(a^4x^4-1\right)\cot^{-1}(ax)^2+a^2x^2-4\log\left(a^2x^2+1\right)+2ax\left(a^2x^2-3\right)\cot^{-1}(ax)}{12a^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^3*ArcCot[a*x]^2,x]
```

```
[Out] (a^2*x^2 + 2*a*x*(-3 + a^2*x^2)*ArcCot[a*x] + 3*(-1 + a^4*x^4)*ArcCot[a*x]^
2 - 4*Log[1 + a^2*x^2])/(12*a^4)
```

fricas [A] time = 0.64, size = 60, normalized size = 0.75

$$\frac{a^2x^2+3\left(a^4x^4-1\right)\operatorname{arccot}(ax)^2+2\left(a^3x^3-3\,ax\right)\operatorname{arccot}(ax)-4\,\log\left(a^2x^2+1\right)}{12\,a^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*arccot(a*x)^2,x, algorithm="fricas")
```

```
[Out] 1/12*(a^2*x^2 + 3*(a^4*x^4 - 1)*arccot(a*x)^2 + 2*(a^3*x^3 - 3*a*x)*arccot(
a*x) - 4*log(a^2*x^2 + 1))/a^4
```

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

$$\int x^3\operatorname{arccot}(ax)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*arccot(a*x)^2,x, algorithm="giac")
```

```
[Out] integrate(x^3*arccot(a*x)^2, x)
```

maple [A] time = 0.05, size = 82, normalized size = 1.02

$$\frac{x^4\operatorname{arccot}(ax)^2}{4}+\frac{x^3\operatorname{arccot}(ax)}{6a}-\frac{x\operatorname{arccot}(ax)}{2a^3}+\frac{\operatorname{arccot}(ax)\arctan(ax)}{2a^4}+\frac{x^2}{12a^2}-\frac{\ln\left(a^2x^2+1\right)}{3a^4}+\frac{\arctan(ax)^2}{4a^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*arccot(a*x)^2,x)
```

```
[Out] 1/4*x^4*arccot(a*x)^2+1/6*x^3*arccot(a*x)/a-1/2*x*arccot(a*x)/a^3+1/2/a^4*a
rccot(a*x)*arctan(a*x)+1/12*x^2/a^2-1/3*ln(a^2*x^2+1)/a^4+1/4/a^4*arctan(a*
x)^2
```

maxima [A] time = 0.42, size = 77, normalized size = 0.96

$$\frac{1}{4}\,x^4\operatorname{arccot}(ax)^2+\frac{1}{6}\,a\left(\frac{a^2x^3-3\,x}{a^4}+\frac{3\,\arctan(ax)}{a^5}\right)\operatorname{arccot}(ax)+\frac{a^2x^2+3\,\arctan(ax)^2-4\,\log\left(a^2x^2+1\right)}{12\,a^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*arccot(a*x)^2,x, algorithm="maxima")
```

```
[Out] 1/4*x^4*arccot(a*x)^2 + 1/6*a*((a^2*x^3 - 3*x)/a^4 + 3*arctan(a*x)/a^5)*arc
cot(a*x) + 1/12*(a^2*x^2 + 3*arctan(a*x)^2 - 4*log(a^2*x^2 + 1))/a^4
```

mupad [B] time = 0.20, size = 66, normalized size = 0.82

$$\frac{x^4\operatorname{acot}(a\,x)^2}{4}-\frac{\frac{\ln\left(a^2\,x^2+1\right)}{3}-\frac{a^2\,x^2}{12}+\frac{\operatorname{acot}(a\,x)^2}{4}-\frac{a^3\,x^3\operatorname{acot}(a\,x)}{6}+\frac{a\,x\operatorname{acot}(a\,x)}{2}}{a^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*acot(a*x)^2,x)
```

```
[Out] (x^4*acot(a*x)^2)/4 - (log(a^2*x^2 + 1)/3 - (a^2*x^2)/12 + acot(a*x)^2/4 -
(a^3*x^3*acot(a*x))/6 + (a*x*acot(a*x))/2)/a^4
```

sympy [A] time = 1.03, size = 78, normalized size = 0.98

$$\begin{cases} \frac{x^4\operatorname{acot}^2(ax)}{4}+\frac{x^3\operatorname{acot}(ax)}{6a}+\frac{x^2}{12a^2}-\frac{x\operatorname{acot}(ax)}{2a^3}-\frac{\log\left(a^2x^2+1\right)}{3a^4}-\frac{\operatorname{acot}^2(ax)}{4a^4} & \text{for } a\neq 0 \\ \frac{\pi^2x^4}{16} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*acot(a*x)**2,x)
```

```
[Out] Piecewise((x**4*acot(a*x)**2/4 + x**3*acot(a*x)/(6*a) + x**2/(12*a**2) - x*
acot(a*x)/(2*a**3) - log(a**2*x**2 + 1)/(3*a**4) - acot(a*x)**2/(4*a**4), N
e(a, 0)), (pi**2*x**4/16, True))
```

3.15 $\int x^2 \cot^{-1}(ax)^2 \, dx$

Optimal. Leaf size=111

$$-\frac{i\text{Li}_2\left(1-\frac{2}{iax+1}\right)}{3a^3}-\frac{\tan^{-1}(ax)}{3a^3}-\frac{i\cot^{-1}(ax)^2}{3a^3}+\frac{2\log\left(\frac{2}{1+iax}\right)\cot^{-1}(ax)}{3a^3}+\frac{x}{3a^2}+\frac{1}{3}x^3\cot^{-1}(ax)^2+\frac{x^2\cot^{-1}(ax)}{3a}$$

```
[Out] 1/3*x/a^2+1/3*x^2*arccot(a*x)/a-1/3*I*arccot(a*x)^2/a^3+1/3*x^3*arccot(a*x)
^2-1/3*arctan(a*x)/a^3+2/3*arccot(a*x)*ln(2/(1+I*a*x))/a^3-1/3*I*polylog(2,
1-2/(1+I*a*x))/a^3
```

Rubi [A] time = 0.14, antiderivative size = 111, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 8, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.800, Rules used = {4853, 4917, 321, 203, 4921, 4855, 2402, 2315}

$$-\frac{i\text{PolyLog}\left(2,1-\frac{2}{1+iax}\right)}{3a^3}+\frac{x}{3a^2}-\frac{\tan^{-1}(ax)}{3a^3}-\frac{i\cot^{-1}(ax)^2}{3a^3}+\frac{2\log\left(\frac{2}{1+iax}\right)\cot^{-1}(ax)}{3a^3}+\frac{1}{3}x^3\cot^{-1}(ax)^2+\frac{x^2\cot^{-1}(ax)}{3a}$$

Antiderivative was successfully verified.

```
[In] Int[x^2*ArcCot[a*x]^2,x]
```

```
[Out] x/(3*a^2) + (x^2*ArcCot[a*x])/(3*a) - ((I/3)*ArcCot[a*x]^2)/a^3 + (x^3*ArcC
ot[a*x]^2)/3 - ArcTan[a*x]/(3*a^3) + (2*ArcCot[a*x]*Log[2/(1 + I*a*x)])/(3*
a^3) - ((I/3)*PolyLog[2, 1 - 2/(1 + I*a*x)])/a^3
```

Rule 203

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

Rule 321

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

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2402

```
Int[Log[(c_.)/((d_) + (e_.)*(x_))]/((f_) + (g_.)*(x_)^2), x_Symbol] :> -Dis
t[e/g, Subst[Int[Log[2*d*x]/(1 - 2*d*x), x], x, 1/(d + e*x)], x] /; FreeQ[{
c, d, e, f, g}, x] && EqQ[c, 2*d] && EqQ[e^2*f + d^2*g, 0]
```

Rule 4853

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcCot[c*x])^p)/(d*(m + 1)), x] + Dist[(b*c*p
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcCot[c*x])^(p - 1))/(1 + c^2*x^2
), x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[p, 0] && (EqQ[p, 1] || Integ
erQ[m]) && NeQ[m, -1]
```

Rule 4855

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symbol]
 :> -Simp[((a + b*ArcCot[c*x])^p*Log[2/(1 + (e*x)/d)])/e, x] - Dist[(b*c*p)
/e, Int[((a + b*ArcCot[c*x])^(p - 1)*Log[2/(1 + (e*x)/d)])/(1 + c^2*x^2), x
], x] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[p, 0] && EqQ[c^2*d^2 + e^2, 0]
```

Rule 4917

```
Int[(((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)*((f_.)*(x_))^(m_))/((d_) + (e
_.)*(x_)^2), x_Symbol] :> Dist[f^2/e, Int[(f*x)^(m - 2)*(a + b*ArcCot[c*x])
^p, x], x] - Dist[(d*f^2)/e, Int[((f*x)^(m - 2)*(a + b*ArcCot[c*x])^p)/(d +
 e*x^2), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && GtQ[p, 0] && GtQ[m, 1]
```

Rule 4921

```
Int[(((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)*(x_))/((d_) + (e_.)*(x_)^2),
x_Symbol] :> Simp[(I*(a + b*ArcCot[c*x])^(p + 1))/(b*e*(p + 1)), x] - Dist[
1/(c*d), Int[(a + b*ArcCot[c*x])^p/(I - c*x), x], x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[e, c^2*d] && IGtQ[p, 0]
```

Rubi steps

$$
\begin{aligned}
\int x^2 \cot^{-1}(ax)^2\,dx &= \frac{1}{3}x^3\cot^{-1}(ax)^2 + \frac{1}{3}(2a)\int \frac{x^3\cot^{-1}(ax)}{1+a^2x^2}\,dx \\
&= \frac{1}{3}x^3\cot^{-1}(ax)^2 + \frac{2\int x\cot^{-1}(ax)\,dx}{3a} - \frac{2\int \frac{x\cot^{-1}(ax)}{1+a^2x^2}\,dx}{3a} \\
&= \frac{x^2\cot^{-1}(ax)}{3a} - \frac{i\cot^{-1}(ax)^2}{3a^3} + \frac{1}{3}x^3\cot^{-1}(ax)^2 + \frac{1}{3}\int \frac{x^2}{1+a^2x^2}\,dx + \frac{2\int \frac{\cot^{-1}(ax)}{i-ax}\,dx}{3a^2} \\
&= \frac{x}{3a^2} + \frac{x^2\cot^{-1}(ax)}{3a} - \frac{i\cot^{-1}(ax)^2}{3a^3} + \frac{1}{3}x^3\cot^{-1}(ax)^2 + \frac{2\cot^{-1}(ax)\log\left(\frac{2}{1+iax}\right)}{3a^3} - \frac{\int \frac{1}{1+a^2x^2}}{3a^2} \\
&= \frac{x}{3a^2} + \frac{x^2\cot^{-1}(ax)}{3a} - \frac{i\cot^{-1}(ax)^2}{3a^3} + \frac{1}{3}x^3\cot^{-1}(ax)^2 - \frac{\tan^{-1}(ax)}{3a^3} + \frac{2\cot^{-1}(ax)\log\left(\frac{2}{1+ia}\right.}{3a^3} \\
&= \frac{x}{3a^2} + \frac{x^2\cot^{-1}(ax)}{3a} - \frac{i\cot^{-1}(ax)^2}{3a^3} + \frac{1}{3}x^3\cot^{-1}(ax)^2 - \frac{\tan^{-1}(ax)}{3a^3} + \frac{2\cot^{-1}(ax)\log\left(\frac{2}{1+ia}\right.}{3a^3}
\end{aligned}
$$

Mathematica [A] time = 0.29, size = 76, normalized size = 0.68

$$
\frac{(a^3x^3-i)\cot^{-1}(ax)^2+\cot^{-1}(ax)\left(a^2x^2+2\log\left(1-e^{2i\cot^{-1}(ax)}\right)+1\right)-i\mathrm{Li}_2\left(e^{2i\cot^{-1}(ax)}\right)+ax}{3a^3}
$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[x^2*ArcCot[a*x]^2,x]
```

```
[Out] (a*x + (-I + a^3*x^3)*ArcCot[a*x]^2 + ArcCot[a*x]*(1 + a^2*x^2 + 2*Log[1 -
E^((2*I)*ArcCot[a*x])]) - I*PolyLog[2, E^((2*I)*ArcCot[a*x])])/(3*a^3)
```

fricas [F] time = 0.63, size = 0, normalized size = 0.00

$$
\text{integral}\left(x^2\,\text{arccot}\,(ax)^2\,,x\right)
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*arccot(a*x)^2,x, algorithm="fricas")
```

```
[Out] integral(x^2*arccot(a*x)^2, x)
```

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

$$\int x^2 \operatorname{arccot}(ax)^2 \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*arccot(a*x)^2,x, algorithm="giac")
```

```
[Out] integrate(x^2*arccot(a*x)^2, x)
```

maple [B] time = 0.13, size = 213, normalized size = 1.92

$$\frac{x^3 \operatorname{arccot}(ax)^2}{3} + \frac{x^2 \operatorname{arccot}(ax)}{3a} - \frac{\operatorname{arccot}(ax)\ln\left(a^2x^2+1\right)}{3a^3} + \frac{x}{3a^2} - \frac{\arctan(ax)}{3a^3} + \frac{i\ln(ax-i)\ln\left(a^2x^2+1\right)}{6a^3} - \frac{i\ln(ax-}{12a^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*arccot(a*x)^2,x)
```

```
[Out] 1/3*x^3*arccot(a*x)^2+1/3*x^2*arccot(a*x)/a-1/3/a^3*arccot(a*x)*ln(a^2*x^2+
1)+1/3*x/a^2-1/3*arctan(a*x)/a^3+1/6*I/a^3*ln(a*x-I)*ln(a^2*x^2+1)-1/12*I/a
^3*ln(a*x-I)^2-1/6*I/a^3*dilog(-1/2*I*(I+a*x))-1/6*I/a^3*ln(a*x-I)*ln(-1/2*
I*(I+a*x))-1/6*I/a^3*ln(I+a*x)*ln(a^2*x^2+1)+1/12*I/a^3*ln(I+a*x)^2+1/6*I/a
^3*dilog(1/2*I*(a*x-I))+1/6*I/a^3*ln(I+a*x)*ln(1/2*I*(a*x-I))
```

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

$$\frac{1}{12}x^3\arctan(1,ax)^2 - \frac{1}{48}x^3\log\left(a^2x^2+1\right)^2 + \int \frac{36\,a^2x^4\arctan(1,ax)^2 + 4\,a^2x^4\log\left(a^2x^2+1\right) + 8\,ax^3\arctan(1,}{48\left(a^2x^2+\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*arccot(a*x)^2,x, algorithm="maxima")
```

```
[Out] 1/12*x^3*arctan2(1, a*x)^2 - 1/48*x^3*log(a^2*x^2 + 1)^2 + integrate(1/48*(
36*a^2*x^4*arctan2(1, a*x)^2 + 4*a^2*x^4*log(a^2*x^2 + 1) + 8*a*x^3*arctan2
(1, a*x) + 36*x^2*arctan2(1, a*x)^2 + 3*(a^2*x^4 + x^2)*log(a^2*x^2 + 1)^2)
/(a^2*x^2 + 1), x)
```

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

$$\int x^2\,\mathrm{acot}(a\,x)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*acot(a*x)^2,x)
```

```
[Out] int(x^2*acot(a*x)^2, x)
```

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

$$\int x^2 \operatorname{acot}^2(ax)\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*acot(a*x)**2,x)
```

```
[Out] Integral(x**2*acot(a*x)**2, x)
```

3.16 $\int x \cot^{-1}(ax)^2 \, dx$

Optimal. Leaf size=53

$$\frac{\log\left(a^2x^2+1\right)}{2a^2}+\frac{\cot^{-1}(ax)^2}{2a^2}+\frac{1}{2}x^2\cot^{-1}(ax)^2+\frac{x\cot^{-1}(ax)}{a}$$

```
[Out] x*arccot(a*x)/a+1/2*arccot(a*x)^2/a^2+1/2*x^2*arccot(a*x)^2+1/2*ln(a^2*x^2+
1)/a^2
```

Rubi [A] time = 0.07, antiderivative size = 53, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 8, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.625, Rules used = {4853, 4917, 4847, 260, 4885}

$$\frac{\log\left(a^2x^2+1\right)}{2a^2}+\frac{\cot^{-1}(ax)^2}{2a^2}+\frac{1}{2}x^2\cot^{-1}(ax)^2+\frac{x\cot^{-1}(ax)}{a}$$

Antiderivative was successfully verified.

```
[In] Int[x*ArcCot[a*x]^2,x]
```

```
[Out] (x*ArcCot[a*x])/a + ArcCot[a*x]^2/(2*a^2) + (x^2*ArcCot[a*x]^2)/2 + Log[1 +
 a^2*x^2]/(2*a^2)
```

Rule 260

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

Rule 4847

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b*Ar
cCot[c*x])^p, x] + Dist[b*c*p, Int[(x*(a + b*ArcCot[c*x])^(p - 1))/(1 + c^2
*x^2), x], x] /; FreeQ[{a, b, c}, x] && IGtQ[p, 0]
```

Rule 4853

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcCot[c*x])^p)/(d*(m + 1)), x] + Dist[(b*c*p
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcCot[c*x])^(p - 1))/(1 + c^2*x^2
), x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[p, 0] && (EqQ[p, 1] || Integ
erQ[m]) && NeQ[m, -1]
```

Rule 4885

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)^2), x_Symbo
l] :> -Simp[(a + b*ArcCot[c*x])^(p + 1)/(b*c*d*(p + 1)), x] /; FreeQ[{a, b,
 c, d, e, p}, x] && EqQ[e, c^2*d] && NeQ[p, -1]
```

Rule 4917

```
Int[(((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)*((f_.)*(x_))^(m_))/((d_) + (e
_.)*(x_)^2), x_Symbol] :> Dist[f^2/e, Int[(f*x)^(m - 2)*(a + b*ArcCot[c*x])
^p, x], x] - Dist[(d*f^2)/e, Int[((f*x)^(m - 2)*(a + b*ArcCot[c*x])^p)/(d +
 e*x^2), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && GtQ[p, 0] && GtQ[m, 1]
```

Rubi steps

$$\begin{aligned}\int x\cot^{-1}(ax)^2\,dx &= \frac{1}{2}x^2\cot^{-1}(ax)^2 + a\int \frac{x^2\cot^{-1}(ax)}{1+a^2x^2}\,dx \\ &= \frac{1}{2}x^2\cot^{-1}(ax)^2 + \frac{\int \cot^{-1}(ax)\,dx}{a} - \frac{\int \frac{\cot^{-1}(ax)}{1+a^2x^2}\,dx}{a} \\ &= \frac{x\cot^{-1}(ax)}{a} + \frac{\cot^{-1}(ax)^2}{2a^2} + \frac{1}{2}x^2\cot^{-1}(ax)^2 + \int \frac{x}{1+a^2x^2}\,dx \\ &= \frac{x\cot^{-1}(ax)}{a} + \frac{\cot^{-1}(ax)^2}{2a^2} + \frac{1}{2}x^2\cot^{-1}(ax)^2 + \frac{\log\left(1+a^2x^2\right)}{2a^2}\end{aligned}$$

Mathematica [A] time = 0.01, size = 42, normalized size = 0.79

$$\frac{\log\left(a^2x^2+1\right) + \left(a^2x^2+1\right)\cot^{-1}(ax)^2 + 2ax\cot^{-1}(ax)}{2a^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[x*ArcCot[a*x]^2,x]
```

```
[Out] (2*a*x*ArcCot[a*x] + (1 + a^2*x^2)*ArcCot[a*x]^2 + Log[1 + a^2*x^2])/(2*a^2
)
```

fricas [A] time = 0.59, size = 40, normalized size = 0.75

$$\frac{2\,ax\,\mathrm{arccot}\left(ax\right) + \left(a^2x^2+1\right)\mathrm{arccot}\left(ax\right)^2 + \log\left(a^2x^2+1\right)}{2\,a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*arccot(a*x)^2,x, algorithm="fricas")
```

```
[Out] 1/2*(2*a*x*arccot(a*x) + (a^2*x^2 + 1)*arccot(a*x)^2 + log(a^2*x^2 + 1))/a^
2
```

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

$$\int x\,\mathrm{arccot}\left(ax\right)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*arccot(a*x)^2,x, algorithm="giac")
```

```
[Out] integrate(x*arccot(a*x)^2, x)
```

maple [A] time = 0.05, size = 61, normalized size = 1.15

$$\frac{x^2\mathrm{arccot}\left(ax\right)^2}{2} - \frac{\mathrm{arccot}\left(ax\right)\arctan\left(ax\right)}{a^2} + \frac{x\,\mathrm{arccot}\left(ax\right)}{a} + \frac{\ln\left(a^2x^2+1\right)}{2a^2} - \frac{\arctan\left(ax\right)^2}{2a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*arccot(a*x)^2,x)
```

```
[Out] 1/2*x^2*arccot(a*x)^2-1/a^2*arccot(a*x)*arctan(a*x)+x*arccot(a*x)/a+1/2*ln(
a^2*x^2+1)/a^2-1/2/a^2*arctan(a*x)^2
```

maxima [A] time = 0.42, size = 57, normalized size = 1.08

$$\frac{1}{2}\,x^2\,\mathrm{arccot}\left(ax\right)^2 + a\left(\frac{x}{a^2} - \frac{\arctan\left(ax\right)}{a^3}\right)\mathrm{arccot}\left(ax\right) - \frac{\arctan\left(ax\right)^2 - \log\left(a^2x^2+1\right)}{2\,a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*arccot(a*x)^2,x, algorithm="maxima")
```

```
[Out] 1/2*x^2*arccot(a*x)^2 + a*(x/a^2 - arctan(a*x)/a^3)*arccot(a*x) - 1/2*(arct
an(a*x)^2 - log(a^2*x^2 + 1))/a^2
```

mupad [B] time = 0.14, size = 44, normalized size = 0.83

$$\frac{x^2\,\mathrm{acot}\left(a\,x\right)^2}{2}+\frac{\frac{\mathrm{acot}(a\,x)^2}{2}+a\,x\,\mathrm{acot}\left(a\,x\right)+\frac{\ln\left(a^2\,x^2+1\right)}{2}}{a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*acot(a*x)^2,x)
```

```
[Out] (x^2*acot(a*x)^2)/2 + (log(a^2*x^2 + 1)/2 + acot(a*x)^2/2 + a*x*acot(a*x))/
a^2
```

sympy [A] time = 0.48, size = 54, normalized size = 1.02

$$\begin{cases} \frac{x^2\operatorname{acot}^2\left(ax\right)}{2}+\frac{x\operatorname{acot}\left(ax\right)}{a}+\frac{\log\left(a^2x^2+1\right)}{2a^2}+\frac{\operatorname{acot}^2\left(ax\right)}{2a^2} & \text{for } a\neq 0 \\ \frac{\pi^2x^2}{8} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*acot(a*x)**2,x)
```

```
[Out] Piecewise((x**2*acot(a*x)**2/2 + x*acot(a*x)/a + log(a**2*x**2 + 1)/(2*a**2
) + acot(a*x)**2/(2*a**2), Ne(a, 0)), (pi**2*x**2/8, True))
```

3.17 $\int \cot^{-1}(ax)^2\,dx$

Optimal. Leaf size=67

$$\frac{i\text{Li}_2\left(1-\frac{2}{iax+1}\right)}{a}+x\cot^{-1}(ax)^2+\frac{i\cot^{-1}(ax)^2}{a}-\frac{2\log\left(\frac{2}{1+iax}\right)\cot^{-1}(ax)}{a}$$

```
[Out] I*arccot(a*x)^2/a+x*arccot(a*x)^2-2*arccot(a*x)*ln(2/(1+I*a*x))/a+I*polylog
(2,1-2/(1+I*a*x))/a
```

Rubi [A] time = 0.07, antiderivative size = 67, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 6, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.833, Rules used = {4847, 4921, 4855, 2402, 2315}

$$\frac{i\text{PolyLog}\left(2,1-\frac{2}{1+iax}\right)}{a}+x\cot^{-1}(ax)^2+\frac{i\cot^{-1}(ax)^2}{a}-\frac{2\log\left(\frac{2}{1+iax}\right)\cot^{-1}(ax)}{a}$$

Antiderivative was successfully verified.

```
[In] Int[ArcCot[a*x]^2,x]
```

```
[Out] (I*ArcCot[a*x]^2)/a + x*ArcCot[a*x]^2 - (2*ArcCot[a*x]*Log[2/(1 + I*a*x)])/
a + (I*PolyLog[2, 1 - 2/(1 + I*a*x)])/a
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2402

```
Int[Log[(c_.)/((d_) + (e_.)*(x_))]/((f_) + (g_.)*(x_)^2), x_Symbol] :> -Dis
t[e/g, Subst[Int[Log[2*d*x]/(1 - 2*d*x), x], x, 1/(d + e*x)], x] /; FreeQ[{
c, d, e, f, g}, x] && EqQ[c, 2*d] && EqQ[e^2*f + d^2*g, 0]
```

Rule 4847

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b*Ar
cCot[c*x])^p, x] + Dist[b*c*p, Int[(x*(a + b*ArcCot[c*x])^(p - 1))/(1 + c^2
*x^2), x], x] /; FreeQ[{a, b, c}, x] && IGtQ[p, 0]
```

Rule 4855

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symbol]
 :> -Simp[((a + b*ArcCot[c*x])^p*Log[2/(1 + (e*x)/d)])/e, x] - Dist[(b*c*p)
/e, Int[((a + b*ArcCot[c*x])^(p - 1)*Log[2/(1 + (e*x)/d)])/(1 + c^2*x^2), x
], x] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[p, 0] && EqQ[c^2*d^2 + e^2, 0]
```

Rule 4921

```
Int[(((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)*(x_))/((d_) + (e_.)*(x_)^2),
x_Symbol] :> Simp[(I*(a + b*ArcCot[c*x])^(p + 1))/(b*e*(p + 1)), x] - Dist[
1/(c*d), Int[(a + b*ArcCot[c*x])^p/(I - c*x), x], x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[e, c^2*d] && IGtQ[p, 0]
```

Rubi steps

$$
\begin{aligned}
\int \cot^{-1}(ax)^2\,dx &= x\cot^{-1}(ax)^2 + (2a)\int \frac{x\cot^{-1}(ax)}{1+a^2x^2}\,dx \\
&= \frac{i\cot^{-1}(ax)^2}{a} + x\cot^{-1}(ax)^2 - 2\int \frac{\cot^{-1}(ax)}{i-ax}\,dx \\
&= \frac{i\cot^{-1}(ax)^2}{a} + x\cot^{-1}(ax)^2 - \frac{2\cot^{-1}(ax)\log\left(\frac{2}{1+iax}\right)}{a} - 2\int \frac{\log\left(\frac{2}{1+iax}\right)}{1+a^2x^2}\,dx \\
&= \frac{i\cot^{-1}(ax)^2}{a} + x\cot^{-1}(ax)^2 - \frac{2\cot^{-1}(ax)\log\left(\frac{2}{1+iax}\right)}{a} + \frac{(2i)\,\text{Subst}\left(\int \frac{\log(2x)}{1-2x}\,dx, x, \frac{1}{1+iax}\right)}{a} \\
&= \frac{i\cot^{-1}(ax)^2}{a} + x\cot^{-1}(ax)^2 - \frac{2\cot^{-1}(ax)\log\left(\frac{2}{1+iax}\right)}{a} + \frac{i\text{Li}_2\left(1-\frac{2}{1+iax}\right)}{a}
\end{aligned}
$$

Mathematica [A] time = 0.08, size = 56, normalized size = 0.84

$$
\frac{i\text{Li}_2\left(e^{2i\cot^{-1}(ax)}\right) + \cot^{-1}(ax)\left((ax+i)\cot^{-1}(ax) - 2\log\left(1-e^{2i\cot^{-1}(ax)}\right)\right)}{a}
$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[ArcCot[a*x]^2,x]
[Out] (ArcCot[a*x]*((I + a*x)*ArcCot[a*x] - 2*Log[1 - E^((2*I)*ArcCot[a*x])]) + I
*PolyLog[2, E^((2*I)*ArcCot[a*x])])/a
```

fricas [F] time = 0.59, size = 0, normalized size = 0.00

$$
\text{integral}\left(\text{arccot}\,(ax)^2, x\right)
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(a*x)^2,x, algorithm="fricas")
[Out] integral(arccot(a*x)^2, x)
```

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

$$
\int \text{arccot}\,(ax)^2\,dx
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(a*x)^2,x, algorithm="giac")
[Out] integrate(arccot(a*x)^2, x)
```

maple [B] time = 0.42, size = 136, normalized size = 2.03

$$
x\text{arccot}\,(ax)^2 + \frac{i\text{arccot}\,(ax)^2}{a} - \frac{2\,\text{arccot}\,(ax)\ln\left(1+\frac{ax+i}{\sqrt{a^2x^2+1}}\right)}{a} - \frac{2\,\text{arccot}\,(ax)\ln\left(1-\frac{ax+i}{\sqrt{a^2x^2+1}}\right)}{a} + \frac{2i\,\text{polylog}\left(2,-\right.}{a}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arccot(a*x)^2,x)
[Out] x*arccot(a*x)^2+I*arccot(a*x)^2/a-2/a*arccot(a*x)*ln(1+(I+a*x)/(a^2*x^2+1)^
(1/2))-2/a*arccot(a*x)*ln(1-(I+a*x)/(a^2*x^2+1)^(1/2))+2*I/a*polylog(2,-(I+
a*x)/(a^2*x^2+1)^(1/2))+2*I/a*polylog(2,(I+a*x)/(a^2*x^2+1)^(1/2))
```

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

$$\frac{1}{4}\,x\arctan\left(1,ax\right)^{2}+12\,a^{2}\int\frac{x^{2}\arctan\left(\frac{1}{ax}\right)^{2}}{16\left(a^{2}x^{2}+1\right)}\,dx+a^{2}\int\frac{x^{2}\log\left(a^{2}x^{2}+1\right)^{2}}{16\left(a^{2}x^{2}+1\right)}\,dx+4\,a^{2}\int\frac{x^{2}\log\left(a^{2}x^{2}+1\right)}{16\left(a^{2}x^{2}+1\right)}\,dx-\frac{1}{16}\,x\log$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(a*x)^2,x, algorithm="maxima")
```

```
[Out] 1/4*x*arctan2(1, a*x)^2 + 12*a^2*integrate(1/16*x^2*arctan(1/(a*x))^2/(a^2*
x^2 + 1), x) + a^2*integrate(1/16*x^2*log(a^2*x^2 + 1)^2/(a^2*x^2 + 1), x)
+ 4*a^2*integrate(1/16*x^2*log(a^2*x^2 + 1)/(a^2*x^2 + 1), x) - 1/16*x*log(
a^2*x^2 + 1)^2 + 1/4*arctan(a*x)^3/a + 3/4*arctan(a*x)^2*arctan(1/(a*x))/a
+ 3/4*arctan(a*x)*arctan(1/(a*x))^2/a + 8*a*integrate(1/16*x*arctan(1/(a*x)
)/(a^2*x^2 + 1), x) + integrate(1/16*log(a^2*x^2 + 1)^2/(a^2*x^2 + 1), x)
```

mupad [B] time = 0.59, size = 55, normalized size = 0.82

$$\frac{-2\,\ln\left(1-\mathrm{e}^{\mathrm{acot}(a\,x)\,2\mathrm{i}}\right)\,\mathrm{acot}\left(a\,x\right)+\mathrm{polylog}\left(2,\mathrm{e}^{\mathrm{acot}(a\,x)\,2\mathrm{i}}\right)\,1\mathrm{i}+\mathrm{acot}\left(a\,x\right)^{2}\,1\mathrm{i}}{a}+x\,\mathrm{acot}\left(a\,x\right)^{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(acot(a*x)^2,x)
```

```
[Out] (polylog(2, exp(acot(a*x)*2i))*1i - 2*log(1 - exp(acot(a*x)*2i))*acot(a*x)
+ acot(a*x)^2*1i)/a + x*acot(a*x)^2
```

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

$$\int \operatorname{acot}^{2}\left(ax\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(acot(a*x)**2,x)
```

```
[Out] Integral(acot(a*x)**2, x)
```

3.18 $\int \frac{\cot^{-1}(ax)^2}{x} \, dx$

Optimal. Leaf size=116

$$-\frac{1}{2}\text{Li}_3\left(1-\frac{2i}{ax+i}\right)+\frac{1}{2}\text{Li}_3\left(1-\frac{2ax}{ax+i}\right)-i\text{Li}_2\left(1-\frac{2i}{ax+i}\right)\cot^{-1}(ax)+i\text{Li}_2\left(1-\frac{2ax}{ax+i}\right)\cot^{-1}(ax)+2\cot^{-1}(ax)^2$$

```
[Out] 2*arccot(a*x)^2*arccoth(1-2/(1+I*a*x))-I*arccot(a*x)*polylog(2,1-2*I/(I+a*x
))+I*arccot(a*x)*polylog(2,1-2*a*x/(I+a*x))-1/2*polylog(3,1-2*I/(I+a*x))+1/
2*polylog(3,1-2*a*x/(I+a*x))
```

Rubi [A] time = 0.21, antiderivative size = 116, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}} = 0.500$, Rules used = {4851, 4989, 4885, 4993, 6610}

$$-\frac{1}{2}\text{PolyLog}\left(3,1-\frac{2i}{ax+i}\right)+\frac{1}{2}\text{PolyLog}\left(3,1-\frac{2ax}{ax+i}\right)-i\cot^{-1}(ax)\text{PolyLog}\left(2,1-\frac{2i}{ax+i}\right)+i\cot^{-1}(ax)\text{PolyL}$$

Antiderivative was successfully verified.

```
[In] Int[ArcCot[a*x]^2/x,x]
```

```
[Out] 2*ArcCot[a*x]^2*ArcCoth[1 - 2/(1 + I*a*x)] - I*ArcCot[a*x]*PolyLog[2, 1 - (
2*I)/(I + a*x)] + I*ArcCot[a*x]*PolyLog[2, 1 - (2*a*x)/(I + a*x)] - PolyLog
[3, 1 - (2*I)/(I + a*x)]/2 + PolyLog[3, 1 - (2*a*x)/(I + a*x)]/2
```

Rule 4851

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_)/(x_), x_Symbol] :> Simp[2*(a +
b*ArcCot[c*x])^p*ArcCoth[1 - 2/(1 + I*c*x)], x] + Dist[2*b*c*p, Int[((a + b
*ArcCot[c*x])^(p - 1)*ArcCoth[1 - 2/(1 + I*c*x)])/(1 + c^2*x^2), x], x] /;
FreeQ[{a, b, c}, x] && IGtQ[p, 1]
```

Rule 4885

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)^2), x_Symbo
l] :> -Simp[(a + b*ArcCot[c*x])^(p + 1)/(b*c*d*(p + 1)), x] /; FreeQ[{a, b,
 c, d, e, p}, x] && EqQ[e, c^2*d] && NeQ[p, -1]
```

Rule 4989

```
Int[(ArcCoth[u_]*((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.))/((d_) + (e_.)*(x
_)^2), x_Symbol] :> Dist[1/2, Int[(Log[SimplifyIntegrand[1 + 1/u, x]]*(a +
b*ArcCot[c*x])^p)/(d + e*x^2), x], x] - Dist[1/2, Int[(Log[SimplifyIntegran
d[1 - 1/u, x]]*(a + b*ArcCot[c*x])^p)/(d + e*x^2), x], x] /; FreeQ[{a, b, c
, d, e}, x] && IGtQ[p, 0] && EqQ[e, c^2*d] && EqQ[u^2 - (1 - (2*I)/(I - c*x
))^2, 0]
```

Rule 4993

```
Int[(Log[u_]*((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.))/((d_) + (e_.)*(x_)^2
), x_Symbol] :> Simp[(I*(a + b*ArcCot[c*x])^p*PolyLog[2, 1 - u])/(2*c*d), x
] + Dist[(b*p*I)/2, Int[((a + b*ArcCot[c*x])^(p - 1)*PolyLog[2, 1 - u])/(d
+ e*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[p, 0] && EqQ[e, c^2*d
] && EqQ[(1 - u)^2 - (1 - (2*I)/(I + c*x))^2, 0]
```

Rule 6610

```
Int[(u_)*PolyLog[n_, v_], x_Symbol] :> With[{w = DerivativeDivides[v, u*v,
x]}, Simp[w*PolyLog[n + 1, v], x] /;  !FalseQ[w]] /; FreeQ[n, x]
```

Rubi steps

$$\int \frac{\cot^{-1}(ax)^2}{x}\,dx = 2\cot^{-1}(ax)^2\coth^{-1}\left(1-\frac{2}{1+iax}\right)+(4a)\int \frac{\cot^{-1}(ax)\coth^{-1}\left(1-\frac{2}{1+iax}\right)}{1+a^2x^2}\,dx$$

$$= 2\cot^{-1}(ax)^2\coth^{-1}\left(1-\frac{2}{1+iax}\right)-(2a)\int \frac{\cot^{-1}(ax)\log\left(\frac{2i}{i+ax}\right)}{1+a^2x^2}\,dx+(2a)\int \frac{\cot^{-1}(ax)\log\left(\frac{2}{i\cdot}\right.}{1+a^2x^2}$$

$$= 2\cot^{-1}(ax)^2\coth^{-1}\left(1-\frac{2}{1+iax}\right)-i\cot^{-1}(ax)\text{Li}_2\left(1-\frac{2i}{i+ax}\right)+i\cot^{-1}(ax)\text{Li}_2\left(1-\frac{2ax}{i+ax}\right)\cdot$$

$$= 2\cot^{-1}(ax)^2\coth^{-1}\left(1-\frac{2}{1+iax}\right)-i\cot^{-1}(ax)\text{Li}_2\left(1-\frac{2i}{i+ax}\right)+i\cot^{-1}(ax)\text{Li}_2\left(1-\frac{2ax}{i+ax}\right)\cdot$$

Mathematica [A] time = 0.06, size = 132, normalized size = 1.14

$$-i\cot^{-1}(ax)\text{Li}_2\left(e^{-2i\cot^{-1}(ax)}\right)-i\cot^{-1}(ax)\text{Li}_2\left(-e^{2i\cot^{-1}(ax)}\right)-\frac{1}{2}\text{Li}_3\left(e^{-2i\cot^{-1}(ax)}\right)+\frac{1}{2}\text{Li}_3\left(-e^{2i\cot^{-1}(ax)}\right)-\frac{2}{3}i\cot^{-1}(ax)^3$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[ArcCot[a*x]^2/x,x]
```

```
[Out] ((-2*I)/3)*ArcCot[a*x]^3 - ArcCot[a*x]^2*Log[1 - E^((-2*I)*ArcCot[a*x])] +
ArcCot[a*x]^2*Log[1 + E^((2*I)*ArcCot[a*x])] - I*ArcCot[a*x]*PolyLog[2, E^(
(-2*I)*ArcCot[a*x])] - I*ArcCot[a*x]*PolyLog[2, -E^((2*I)*ArcCot[a*x])] - P
olyLog[3, E^((-2*I)*ArcCot[a*x])]/2 + PolyLog[3, -E^((2*I)*ArcCot[a*x])]/2
```

fricas [F] time = 0.56, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\operatorname{arccot}(ax)^2}{x}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(a*x)^2/x,x, algorithm="fricas")
```

```
[Out] integral(arccot(a*x)^2/x, x)
```

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

$$\int \frac{\operatorname{arccot}(ax)^2}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(a*x)^2/x,x, algorithm="giac")
```

```
[Out] integrate(arccot(a*x)^2/x, x)
```

maple [C] time = 0.88, size = 959, normalized size = 8.27

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arccot(a*x)^2/x,x)
```

```
[Out] ln(a*x)*arccot(a*x)^2-1/2*I*Pi*csgn(I/((I+a*x)^2/(a^2*x^2+1)-1))*csgn(I/((I
+a*x)^2/(a^2*x^2+1)-1)*((I+a*x)^2/(a^2*x^2+1)+1))^2*arccot(a*x)^2+1/2*I*Pi*
```

```
csgn(I/((I+a*x)^2/(a^2*x^2+1)-1)*((I+a*x)^2/(a^2*x^2+1)+1))^3*arccot(a*x)^2
+1/2*I*Pi*csgn(I/((I+a*x)^2/(a^2*x^2+1)-1))*csgn(I/((I+a*x)^2/(a^2*x^2+1)-1
)*((I+a*x)^2/(a^2*x^2+1)+1))*csgn(I*((I+a*x)^2/(a^2*x^2+1)+1))*arccot(a*x)^
2+2*I*arccot(a*x)*polylog(2,-(I+a*x)/(a^2*x^2+1)^(1/2))-1/2*I*Pi*csgn(I/((I
+a*x)^2/(a^2*x^2+1)-1)*((I+a*x)^2/(a^2*x^2+1)+1))*csgn(1/((I+a*x)^2/(a^2*x^
2+1)-1)*((I+a*x)^2/(a^2*x^2+1)+1))^2*arccot(a*x)^2+1/2*I*Pi*csgn(1/((I+a*x)
^2/(a^2*x^2+1)-1)*((I+a*x)^2/(a^2*x^2+1)+1))^2*arccot(a*x)^2+1/2*I*Pi*csgn(
I/((I+a*x)^2/(a^2*x^2+1)-1)*((I+a*x)^2/(a^2*x^2+1)+1))*csgn(1/((I+a*x)^2/(a
^2*x^2+1)-1)*((I+a*x)^2/(a^2*x^2+1)+1))*arccot(a*x)^2-I*arccot(a*x)*polylog
(2,-(I+a*x)^2/(a^2*x^2+1))-1/2*I*Pi*csgn(I/((I+a*x)^2/(a^2*x^2+1)-1)*((I+a*
x)^2/(a^2*x^2+1)+1))^2*csgn(I*((I+a*x)^2/(a^2*x^2+1)+1))*arccot(a*x)^2+arcc
ot(a*x)^2*ln((I+a*x)^2/(a^2*x^2+1)-1)-arccot(a*x)^2*ln(1+(I+a*x)/(a^2*x^2+1
)^(1/2))-1/2*I*Pi*arccot(a*x)^2-2*polylog(3,-(I+a*x)/(a^2*x^2+1)^(1/2))-arc
cot(a*x)^2*ln(1-(I+a*x)/(a^2*x^2+1)^(1/2))-1/2*I*Pi*csgn(1/((I+a*x)^2/(a^2*
x^2+1)-1)*((I+a*x)^2/(a^2*x^2+1)+1))^3*arccot(a*x)^2-2*polylog(3,(I+a*x)/(a
^2*x^2+1)^(1/2))+2*I*arccot(a*x)*polylog(2,(I+a*x)/(a^2*x^2+1)^(1/2))+1/2*p
olylog(3,-(I+a*x)^2/(a^2*x^2+1))
```

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

$$\int \frac{\operatorname{arccot}(ax)^2}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(a*x)^2/x,x, algorithm="maxima")
```

```
[Out] integrate(arccot(a*x)^2/x, x)
```

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

$$\int \frac{\operatorname{acot}(a\,x)^2}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(acot(a*x)^2/x,x)
```

```
[Out] int(acot(a*x)^2/x, x)
```

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

$$\int \frac{\operatorname{acot}^2(ax)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(acot(a*x)**2/x,x)
```

```
[Out] Integral(acot(a*x)**2/x, x)
```

3.19 $\int \frac{\cot^{-1}(ax)^2}{x^2} dx$

Optimal. Leaf size=66

$$-ia\text{Li}_2\left(\frac{2}{1-iax}-1\right)-ia\cot^{-1}(ax)^2-\frac{\cot^{-1}(ax)^2}{x}-2a\log\left(2-\frac{2}{1-iax}\right)\cot^{-1}(ax)$$

```
[Out] -I*a*arccot(a*x)^2-arccot(a*x)^2/x-2*a*arccot(a*x)*ln(2-2/(1-I*a*x))-I*a*po
lylog(2,-1+2/(1-I*a*x))
```

Rubi [A] time = 0.11, antiderivative size = 66, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.400, Rules used = {4853, 4925, 4869, 2447}

$$-ia\text{PolyLog}\left(2,-1+\frac{2}{1-iax}\right)-ia\cot^{-1}(ax)^2-\frac{\cot^{-1}(ax)^2}{x}-2a\log\left(2-\frac{2}{1-iax}\right)\cot^{-1}(ax)$$

Antiderivative was successfully verified.

```
[In] Int[ArcCot[a*x]^2/x^2,x]
```

```
[Out] (-I)*a*ArcCot[a*x]^2 - ArcCot[a*x]^2/x - 2*a*ArcCot[a*x]*Log[2 - 2/(1 - I*a
*x)] - I*a*PolyLog[2, -1 + 2/(1 - I*a*x)]
```

Rule 2447

```
Int[Log[u_]*(Pq_)^(m_.), x_Symbol] :> With[{C = FullSimplify[(Pq^m*(1 - u))
/D[u, x]]}, Simp[C*PolyLog[2, 1 - u], x] /; FreeQ[C, x]] /; IntegerQ[m] &&
PolyQ[Pq, x] && RationalFunctionQ[u, x] && LeQ[RationalFunctionExponents[u,
 x][[2]], Expon[Pq, x]]
```

Rule 4853

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcCot[c*x])^p)/(d*(m + 1)), x] + Dist[(b*c*p
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcCot[c*x])^(p - 1))/(1 + c^2*x^2
), x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[p, 0] && (EqQ[p, 1] || Integ
erQ[m]) && NeQ[m, -1]
```

Rule 4869

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_))), x_
Symbol] :> Simp[((a + b*ArcCot[c*x])^p*Log[2 - 2/(1 + (e*x)/d)])/d, x] + Di
st[(b*c*p)/d, Int[((a + b*ArcCot[c*x])^(p - 1)*Log[2 - 2/(1 + (e*x)/d)])/(1
 + c^2*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[p, 0] && EqQ[c^2*d
^2 + e^2, 0]
```

Rule 4925

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_)^2)),
x_Symbol] :> Simp[(I*(a + b*ArcCot[c*x])^(p + 1))/(b*d*(p + 1)), x] + Dist[
I/d, Int[(a + b*ArcCot[c*x])^p/(x*(I + c*x)), x], x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[e, c^2*d] && GtQ[p, 0]
```

Rubi steps

$$\int \frac{\cot^{-1}(ax)^2}{x^2}\,dx = -\frac{\cot^{-1}(ax)^2}{x} - (2a)\int \frac{\cot^{-1}(ax)}{x\left(1+a^2x^2\right)}\,dx$$
$$= -ia\cot^{-1}(ax)^2 - \frac{\cot^{-1}(ax)^2}{x} - (2ia)\int \frac{\cot^{-1}(ax)}{x(i+ax)}\,dx$$
$$= -ia\cot^{-1}(ax)^2 - \frac{\cot^{-1}(ax)^2}{x} - 2a\cot^{-1}(ax)\log\left(2-\frac{2}{1-iax}\right) - \left(2a^2\right)\int \frac{\log\left(2-\frac{2}{1-iax}\right)}{1+a^2x^2}\,dx$$
$$= -ia\cot^{-1}(ax)^2 - \frac{\cot^{-1}(ax)^2}{x} - 2a\cot^{-1}(ax)\log\left(2-\frac{2}{1-iax}\right) - ia\mathrm{Li}_2\left(-1+\frac{2}{1-iax}\right)$$

Mathematica [A] time = 0.05, size = 64, normalized size = 0.97

$$a\left(i\mathrm{Li}_2\left(-e^{2i\cot^{-1}(ax)}\right) - \frac{\cot^{-1}(ax)^2}{ax} + i\cot^{-1}(ax)^2 - 2\cot^{-1}(ax)\log\left(1+e^{2i\cot^{-1}(ax)}\right)\right)$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[ArcCot[a*x]^2/x^2,x]
[Out] a*(I*ArcCot[a*x]^2 - ArcCot[a*x]^2/(a*x) - 2*ArcCot[a*x]*Log[1 + E^((2*I)*A
rcCot[a*x])] + I*PolyLog[2, -E^((2*I)*ArcCot[a*x])])
```

fricas [F] time = 0.56, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{\mathrm{arccot}\,(ax)^2}{x^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(a*x)^2/x^2,x, algorithm="fricas")
[Out] integral(arccot(a*x)^2/x^2, x)
```

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

$$\int \frac{\mathrm{arccot}\,(ax)^2}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(a*x)^2/x^2,x, algorithm="giac")
[Out] integrate(arccot(a*x)^2/x^2, x)
```

maple [B] time = 0.14, size = 234, normalized size = 3.55

$$-\frac{\mathrm{arccot}\,(ax)^2}{x} - 2a\,\mathrm{arccot}\,(ax)\ln(ax) + a\,\mathrm{arccot}\,(ax)\ln\left(a^2x^2+1\right) + ia\ln(ax)\ln(iax+1) - ia\ln(ax)\ln(-iax+1$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arccot(a*x)^2/x^2,x)
[Out] -arccot(a*x)^2/x-2*a*arccot(a*x)*ln(a*x)+a*arccot(a*x)*ln(a^2*x^2+1)+I*a*ln
(a*x)*ln(1+I*a*x)-I*a*ln(a*x)*ln(1-I*a*x)+I*a*dilog(1+I*a*x)-I*a*dilog(1-I*
a*x)-1/2*I*a*ln(a*x-I)*ln(a^2*x^2+1)+1/4*I*a*ln(a*x-I)^2+1/2*I*a*dilog(-1/2
*I*(I+a*x))+1/2*I*a*ln(a*x-I)*ln(-1/2*I*(I+a*x))+1/2*I*a*ln(I+a*x)*ln(a^2*x
```

```
^2+1)-1/4*I*a*ln(I+a*x)^2-1/2*I*a*dilog(1/2*I*(a*x-I))-1/2*I*a*ln(I+a*x)*ln
(1/2*I*(a*x-I))
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(a*x)^2/x^2,x, algorithm="maxima")
```

```
[Out] Timed out
```

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

$$\int \frac{\operatorname{acot}(a\,x)^2}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(acot(a*x)^2/x^2,x)
```

```
[Out] int(acot(a*x)^2/x^2, x)
```

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

$$\int \frac{\operatorname{acot}^{2}(ax)}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(acot(a*x)**2/x**2,x)
```

```
[Out] Integral(acot(a*x)**2/x**2, x)
```

3.20 $\int \frac{\cot^{-1}(ax)^2}{x^3} \, dx$

Optimal. Leaf size=59

$$-\frac{1}{2}a^2 \log\left(a^2x^2+1\right) + a^2 \log(x) - \frac{1}{2}a^2 \cot^{-1}(ax)^2 - \frac{\cot^{-1}(ax)^2}{2x^2} + \frac{a \cot^{-1}(ax)}{x}$$

```
[Out] a*arccot(a*x)/x-1/2*a^2*arccot(a*x)^2-1/2*arccot(a*x)^2/x^2+a^2*ln(x)-1/2*a
^2*ln(a^2*x^2+1)
```

Rubi [A] time = 0.09, antiderivative size = 59, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 7, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}} = 0.700$, Rules used = {4853, 4919, 266, 36, 29, 31, 4885}

$$-\frac{1}{2}a^2 \log\left(a^2x^2+1\right) + a^2 \log(x) - \frac{1}{2}a^2 \cot^{-1}(ax)^2 - \frac{\cot^{-1}(ax)^2}{2x^2} + \frac{a \cot^{-1}(ax)}{x}$$

Antiderivative was successfully verified.

```
[In] Int[ArcCot[a*x]^2/x^3,x]
```

```
[Out] (a*ArcCot[a*x])/x - (a^2*ArcCot[a*x]^2)/2 - ArcCot[a*x]^2/(2*x^2) + a^2*Log
[x] - (a^2*Log[1 + a^2*x^2])/2
```

Rule 29

```
Int[(x_)^(-1), x_Symbol] :> Simp[Log[x], x]
```

Rule 31

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

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
 x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 4853

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcCot[c*x])^p)/(d*(m + 1)), x] + Dist[(b*c*p
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcCot[c*x])^(p - 1))/(1 + c^2*x^2
), x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[p, 0] && (EqQ[p, 1] || Integ
erQ[m]) && NeQ[m, -1]
```

Rule 4885

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)^2), x_Symbo
l] :> -Simp[(a + b*ArcCot[c*x])^(p + 1)/(b*c*d*(p + 1)), x] /; FreeQ[{a, b,
 c, d, e, p}, x] && EqQ[e, c^2*d] && NeQ[p, -1]
```

Rule 4919

```
Int[(((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)*((f_.)*(x_))^(m_))/((d_) + (e
_.)*(x_)^2), x_Symbol] :> Dist[1/d, Int[(f*x)^m*(a + b*ArcCot[c*x])^p, x],
x] - Dist[e/(d*f^2), Int[((f*x)^(m + 2)*(a + b*ArcCot[c*x])^p)/(d + e*x^2),
 x], x] /; FreeQ[{a, b, c, d, e, f}, x] && GtQ[p, 0] && LtQ[m, -1]
```

Rubi steps

$$\begin{aligned}
\int \frac{\cot^{-1}(ax)^2}{x^3}\,dx &= -\frac{\cot^{-1}(ax)^2}{2x^2} - a\int \frac{\cot^{-1}(ax)}{x^2\left(1+a^2x^2\right)}\,dx \\
&= -\frac{\cot^{-1}(ax)^2}{2x^2} - a\int \frac{\cot^{-1}(ax)}{x^2}\,dx + a^3\int \frac{\cot^{-1}(ax)}{1+a^2x^2}\,dx \\
&= \frac{a\cot^{-1}(ax)}{x} - \frac{1}{2}a^2\cot^{-1}(ax)^2 - \frac{\cot^{-1}(ax)^2}{2x^2} + a^2\int \frac{1}{x\left(1+a^2x^2\right)}\,dx \\
&= \frac{a\cot^{-1}(ax)}{x} - \frac{1}{2}a^2\cot^{-1}(ax)^2 - \frac{\cot^{-1}(ax)^2}{2x^2} + \frac{1}{2}a^2\,\mathrm{Subst}\left(\int \frac{1}{x\left(1+a^2x\right)}\,dx, x, x^2\right) \\
&= \frac{a\cot^{-1}(ax)}{x} - \frac{1}{2}a^2\cot^{-1}(ax)^2 - \frac{\cot^{-1}(ax)^2}{2x^2} + \frac{1}{2}a^2\,\mathrm{Subst}\left(\int \frac{1}{x}\,dx, x, x^2\right) - \frac{1}{2}a^4\,\mathrm{Subst}\left(\int \frac{1}{1+ \cdots}\right. \\
&= \frac{a\cot^{-1}(ax)}{x} - \frac{1}{2}a^2\cot^{-1}(ax)^2 - \frac{\cot^{-1}(ax)^2}{2x^2} + a^2\log(x) - \frac{1}{2}a^2\log\left(1+a^2x^2\right)
\end{aligned}$$

Mathematica [A] time = 0.02, size = 56, normalized size = 0.95

$$-\frac{1}{2}a^2\log\left(a^2x^2+1\right) + \frac{\left(-a^2x^2-1\right)\cot^{-1}(ax)^2}{2x^2} + a^2\log(x) + \frac{a\cot^{-1}(ax)}{x}$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcCot[a*x]^2/x^3,x]
```

```
[Out] (a*ArcCot[a*x])/x + ((-1 - a^2*x^2)*ArcCot[a*x]^2)/(2*x^2) + a^2*Log[x] - (
a^2*Log[1 + a^2*x^2])/2
```

fricas [A] time = 0.71, size = 57, normalized size = 0.97

$$-\frac{a^2x^2\log\left(a^2x^2+1\right) - 2\,a^2x^2\log(x) - 2\,ax\,\mathrm{arccot}\,(ax) + \left(a^2x^2+1\right)\mathrm{arccot}\,(ax)^2}{2\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(a*x)^2/x^3,x, algorithm="fricas")
```

```
[Out] -1/2*(a^2*x^2*log(a^2*x^2 + 1) - 2*a^2*x^2*log(x) - 2*a*x*arccot(a*x) + (a^
2*x^2 + 1)*arccot(a*x)^2)/x^2
```

giac [A] time = 0.12, size = 60, normalized size = 1.02

$$-\frac{1}{2}\left(\left(\arctan\left(\frac{1}{ax}\right)^2 - \frac{2\arctan\left(\frac{1}{ax}\right)}{ax} + \log\left(\frac{1}{a^2x^2}+1\right)\right)a + \frac{\arctan\left(\frac{1}{ax}\right)^2}{ax^2}\right)a$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(a*x)^2/x^3,x, algorithm="giac")
```

```
[Out] -1/2*((arctan(1/(a*x))^2 - 2*arctan(1/(a*x))/(a*x) + log(1/(a^2*x^2) + 1))*
a + arctan(1/(a*x))^2/(a*x^2))*a
```

maple [A] time = 0.05, size = 68, normalized size = 1.15

$$-\frac{\operatorname{arccot}(ax)^2}{2x^2}+\frac{a \operatorname{arccot}(ax)}{x}+a^2 \operatorname{arccot}(ax)\arctan(ax)+a^2\ln(ax)-\frac{a^2\ln\left(a^2x^2+1\right)}{2}+\frac{a^2\arctan(ax)^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arccot(a*x)^2/x^3,x)
```

```
[Out] -1/2*arccot(a*x)^2/x^2+a*arccot(a*x)/x+a^2*arccot(a*x)*arctan(a*x)+a^2*ln(a
*x)-1/2*a^2*ln(a^2*x^2+1)+1/2*a^2*arctan(a*x)^2
```

maxima [A] time = 0.42, size = 56, normalized size = 0.95

$$\frac{1}{2}\left(\arctan(ax)^2-\log\left(a^2x^2+1\right)+2\log(x)\right)a^2+\left(a\arctan(ax)+\frac{1}{x}\right)a\operatorname{arccot}(ax)-\frac{\operatorname{arccot}(ax)^2}{2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(a*x)^2/x^3,x, algorithm="maxima")
```

```
[Out] 1/2*(arctan(a*x)^2 - log(a^2*x^2 + 1) + 2*log(x))*a^2 + (a*arctan(a*x) + 1/
x)*a*arccot(a*x) - 1/2*arccot(a*x)^2/x^2
```

mupad [B] time = 0.66, size = 50, normalized size = 0.85

$$a^2\ln(x)-\operatorname{acot}(a\,x)^2\left(\frac{a^2}{2}+\frac{1}{2\,x^2}\right)-\frac{a^2\ln\left(a^2\,x^2+1\right)}{2}+\frac{a\operatorname{acot}(a\,x)}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(acot(a*x)^2/x^3,x)
```

```
[Out] a^2*log(x) - acot(a*x)^2*(a^2/2 + 1/(2*x^2)) - (a^2*log(a^2*x^2 + 1))/2 + (
a*acot(a*x))/x
```

sympy [A] time = 0.50, size = 53, normalized size = 0.90

$$a^2\log(x)-\frac{a^2\log\left(a^2x^2+1\right)}{2}-\frac{a^2\operatorname{acot}^2(ax)}{2}+\frac{a\operatorname{acot}(ax)}{x}-\frac{\operatorname{acot}^2(ax)}{2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(acot(a*x)**2/x**3,x)
```

```
[Out] a**2*log(x) - a**2*log(a**2*x**2 + 1)/2 - a**2*acot(a*x)**2/2 + a*acot(a*x)
/x - acot(a*x)**2/(2*x**2)
```

3.21 $\int \frac{\cot^{-1}(ax)^2}{x^4} dx$

Optimal. Leaf size=113

$$\frac{1}{3}ia^3\mathrm{Li}_2\left(\frac{2}{1-iax}-1\right)-\frac{1}{3}a^3\tan^{-1}(ax)+\frac{1}{3}ia^3\cot^{-1}(ax)^2+\frac{2}{3}a^3\log\left(2-\frac{2}{1-iax}\right)\cot^{-1}(ax)-\frac{a^2}{3x}-\frac{\cot^{-1}(ax)^2}{3x^3}+\frac{a\cot^{-1}}{3x}$$

```
[Out] -1/3*a^2/x+1/3*a*arccot(a*x)/x^2+1/3*I*a^3*arccot(a*x)^2-1/3*arccot(a*x)^2/
x^3-1/3*a^3*arctan(a*x)+2/3*a^3*arccot(a*x)*ln(2-2/(1-I*a*x))+1/3*I*a^3*pol
ylog(2,-1+2/(1-I*a*x))
```

Rubi [A] time = 0.16, antiderivative size = 113, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 7, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.700, Rules used = {4853, 4919, 325, 203, 4925, 4869, 2447}

$$\frac{1}{3}ia^3\mathrm{PolyLog}\left(2,-1+\frac{2}{1-iax}\right)-\frac{a^2}{3x}-\frac{1}{3}a^3\tan^{-1}(ax)+\frac{1}{3}ia^3\cot^{-1}(ax)^2+\frac{2}{3}a^3\log\left(2-\frac{2}{1-iax}\right)\cot^{-1}(ax)+\frac{a\cot^{-1}(a}{3x^2}$$

Antiderivative was successfully verified.

```
[In] Int[ArcCot[a*x]^2/x^4,x]
```

```
[Out] -a^2/(3*x) + (a*ArcCot[a*x])/(3*x^2) + (I/3)*a^3*ArcCot[a*x]^2 - ArcCot[a*x
]^2/(3*x^3) - (a^3*ArcTan[a*x])/3 + (2*a^3*ArcCot[a*x]*Log[2 - 2/(1 - I*a*x
)])/3 + (I/3)*a^3*PolyLog[2, -1 + 2/(1 - I*a*x)]
```

Rule 203

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

Rule 325

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

Rule 2447

```
Int[Log[u_]*(Pq_)^(m_.), x_Symbol] :> With[{C = FullSimplify[(Pq^m*(1 - u))
/D[u, x]]}, Simp[C*PolyLog[2, 1 - u], x] /; FreeQ[C, x]] /; IntegerQ[m] &&
PolyQ[Pq, x] && RationalFunctionQ[u, x] && LeQ[RationalFunctionExponents[u,
 x][[2]], Expon[Pq, x]]
```

Rule 4853

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcCot[c*x])^p)/(d*(m + 1)), x] + Dist[(b*c*p
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcCot[c*x])^(p - 1))/(1 + c^2*x^2
), x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[p, 0] && (EqQ[p, 1] || Integ
erQ[m]) && NeQ[m, -1]
```

Rule 4869

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_))), x_
Symbol] :> Simp[((a + b*ArcCot[c*x])^p*Log[2 - 2/(1 + (e*x)/d)])/d, x] + Di
st[(b*c*p)/d, Int[((a + b*ArcCot[c*x])^(p - 1)*Log[2 - 2/(1 + (e*x)/d)])/(1
```

```
 + c^2*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[p, 0] && EqQ[c^2*d
^2 + e^2, 0]
```

Rule 4919

```
Int[(((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)*((f_.)*(x_))^(m_))/((d_) + (e
_.)*(x_)^2), x_Symbol] :> Dist[1/d, Int[(f*x)^m*(a + b*ArcCot[c*x])^p, x],
x] - Dist[e/(d*f^2), Int[((f*x)^(m + 2)*(a + b*ArcCot[c*x])^p)/(d + e*x^2),
 x], x] /; FreeQ[{a, b, c, d, e, f}, x] && GtQ[p, 0] && LtQ[m, -1]
```

Rule 4925

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_)^2)),
x_Symbol] :> Simp[(I*(a + b*ArcCot[c*x])^(p + 1))/(b*d*(p + 1)), x] + Dist[
I/d, Int[(a + b*ArcCot[c*x])^p/(x*(I + c*x)), x], x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[e, c^2*d] && GtQ[p, 0]
```

Rubi steps

$$\int \frac{\cot^{-1}(ax)^2}{x^4}\,dx = -\frac{\cot^{-1}(ax)^2}{3x^3} - \frac{1}{3}(2a)\int \frac{\cot^{-1}(ax)}{x^3\left(1+a^2x^2\right)}\,dx$$

$$= -\frac{\cot^{-1}(ax)^2}{3x^3} - \frac{1}{3}(2a)\int \frac{\cot^{-1}(ax)}{x^3}\,dx + \frac{1}{3}\left(2a^3\right)\int \frac{\cot^{-1}(ax)}{x\left(1+a^2x^2\right)}\,dx$$

$$= \frac{a\cot^{-1}(ax)}{3x^2} + \frac{1}{3}ia^3\cot^{-1}(ax)^2 - \frac{\cot^{-1}(ax)^2}{3x^3} + \frac{1}{3}a^2\int \frac{1}{x^2\left(1+a^2x^2\right)}\,dx + \frac{1}{3}\left(2ia^3\right)\int \frac{\cot^{-1}}{x(i+}$$

$$= -\frac{a^2}{3x} + \frac{a\cot^{-1}(ax)}{3x^2} + \frac{1}{3}ia^3\cot^{-1}(ax)^2 - \frac{\cot^{-1}(ax)^2}{3x^3} + \frac{2}{3}a^3\cot^{-1}(ax)\log\left(2-\frac{2}{1-iax}\right) - \frac{1}{3}$$

$$= -\frac{a^2}{3x} + \frac{a\cot^{-1}(ax)}{3x^2} + \frac{1}{3}ia^3\cot^{-1}(ax)^2 - \frac{\cot^{-1}(ax)^2}{3x^3} - \frac{1}{3}a^3\tan^{-1}(ax) + \frac{2}{3}a^3\cot^{-1}(ax)\log\Bigl($$

Mathematica [A] time = 0.25, size = 96, normalized size = 0.85

$$\frac{-ia^3x^3\text{Li}_2\left(-e^{2i\cot^{-1}(ax)}\right) + \left(-1-ia^3x^3\right)\cot^{-1}(ax)^2 - a^2x^2 + ax\cot^{-1}(ax)\left(a^2x^2 + 2a^2x^2\log\left(1+e^{2i\cot^{-1}(ax)}\right) + \right.}{3x^3}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[ArcCot[a*x]^2/x^4,x]
```

```
[Out] (-(a^2*x^2) + (-1 - I*a^3*x^3)*ArcCot[a*x]^2 + a*x*ArcCot[a*x]*(1 + a^2*x^2
 + 2*a^2*x^2*Log[1 + E^((2*I)*ArcCot[a*x])]) - I*a^3*x^3*PolyLog[2, -E^((2*
I)*ArcCot[a*x])])/(3*x^3)
```

fricas [F] time = 0.68, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\operatorname{arccot}(ax)^2}{x^4}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(a*x)^2/x^4,x, algorithm="fricas")
```

```
[Out] integral(arccot(a*x)^2/x^4, x)
```

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

$$\int \frac{\operatorname{arccot}(ax)^2}{x^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(a*x)^2/x^4,x, algorithm="giac")
```

```
[Out] integrate(arccot(a*x)^2/x^4, x)
```

maple [B] time = 0.14, size = 290, normalized size = 2.57

$$-\frac{\operatorname{arccot}(ax)^2}{3x^3}+\frac{a\operatorname{arccot}(ax)}{3x^2}+\frac{2a^3\operatorname{arccot}(ax)\ln(ax)}{3}-\frac{a^3\operatorname{arccot}(ax)\ln\left(a^2x^2+1\right)}{3}-\frac{ia^3\ln(ax-i)\ln\left(-\frac{i(ax+i)}{2}\right)}{6}+\frac{ia}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arccot(a*x)^2/x^4,x)
```

```
[Out] -1/3*arccot(a*x)^2/x^3+1/3*a*arccot(a*x)/x^2+2/3*a^3*arccot(a*x)*ln(a*x)-1/
3*a^3*arccot(a*x)*ln(a^2*x^2+1)-1/6*I*a^3*ln(a*x-I)*ln(-1/2*I*(I+a*x))-1/3*
I*a^3*ln(a*x)*ln(1+I*a*x)-1/6*I*a^3*ln(I+a*x)*ln(a^2*x^2+1)-1/3*I*a^3*dilog
(1+I*a*x)+1/6*I*a^3*ln(I+a*x)*ln(1/2*I*(a*x-I))+1/3*I*a^3*dilog(1-I*a*x)-1/
6*I*a^3*dilog(-1/2*I*(I+a*x))+1/6*I*a^3*dilog(1/2*I*(a*x-I))-1/3*a^2/x-1/3*
a^3*arctan(a*x)-1/12*I*a^3*ln(a*x-I)^2+1/6*I*a^3*ln(a*x-I)*ln(a^2*x^2+1)+1/
12*I*a^3*ln(I+a*x)^2+1/3*I*a^3*ln(a*x)*ln(1-I*a*x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(a*x)^2/x^4,x, algorithm="maxima")
```

```
[Out] Timed out
```

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

$$\int \frac{\operatorname{acot}(a\,x)^2}{x^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(acot(a*x)^2/x^4,x)
```

```
[Out] int(acot(a*x)^2/x^4, x)
```

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

$$\int \frac{\operatorname{acot}^2(ax)}{x^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(acot(a*x)**2/x**4,x)
```

```
[Out] Integral(acot(a*x)**2/x**4, x)
```

3.22 $\int \frac{\cot^{-1}(ax)^2}{x^5} \, dx$

Optimal. Leaf size=89

$$-\frac{2}{3}a^4\log(x)+\frac{1}{4}a^4\cot^{-1}(ax)^2-\frac{a^3\cot^{-1}(ax)}{2x}-\frac{a^2}{12x^2}+\frac{1}{3}a^4\log\left(a^2x^2+1\right)-\frac{\cot^{-1}(ax)^2}{4x^4}+\frac{a\cot^{-1}(ax)}{6x^3}$$

```
[Out] -1/12*a^2/x^2+1/6*a*arccot(a*x)/x^3-1/2*a^3*arccot(a*x)/x+1/4*a^4*arccot(a*
x)^2-1/4*arccot(a*x)^2/x^4-2/3*a^4*ln(x)+1/3*a^4*ln(a^2*x^2+1)
```

Rubi [A] time = 0.16, antiderivative size = 89, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 8, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.800, Rules used = {4853, 4919, 266, 44, 36, 29, 31, 4885}

$$-\frac{a^2}{12x^2}+\frac{1}{3}a^4\log\left(a^2x^2+1\right)-\frac{2}{3}a^4\log(x)+\frac{1}{4}a^4\cot^{-1}(ax)^2-\frac{a^3\cot^{-1}(ax)}{2x}+\frac{a\cot^{-1}(ax)}{6x^3}-\frac{\cot^{-1}(ax)^2}{4x^4}$$

Antiderivative was successfully verified.

```
[In] Int[ArcCot[a*x]^2/x^5,x]
```

```
[Out] -a^2/(12*x^2) + (a*ArcCot[a*x])/(6*x^3) - (a^3*ArcCot[a*x])/(2*x) + (a^4*Ar
cCot[a*x]^2)/4 - ArcCot[a*x]^2/(4*x^4) - (2*a^4*Log[x])/3 + (a^4*Log[1 + a^
2*x^2])/3
```

Rule 29

```
Int[(x_)^(-1), x_Symbol] :> Simp[Log[x], x]
```

Rule 31

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

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
 x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 44

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

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 4853

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcCot[c*x])^p)/(d*(m + 1)), x] + Dist[(b*c*p
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcCot[c*x])^(p - 1))/(1 + c^2*x^2
), x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[p, 0] && (EqQ[p, 1] || Integ
erQ[m]) && NeQ[m, -1]
```

Rule 4885

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)^2), x_Symbo
l] :> -Simp[(a + b*ArcCot[c*x])^(p + 1)/(b*c*d*(p + 1)), x] /; FreeQ[{a, b,
 c, d, e, p}, x] && EqQ[e, c^2*d] && NeQ[p, -1]
```

Rule 4919

```
Int[(((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)*((f_.)*(x_))^(m_))/((d_) + (e
_.)*(x_)^2), x_Symbol] :> Dist[1/d, Int[(f*x)^m*(a + b*ArcCot[c*x])^p, x],
x] - Dist[e/(d*f^2), Int[((f*x)^(m + 2)*(a + b*ArcCot[c*x])^p)/(d + e*x^2),
 x], x] /; FreeQ[{a, b, c, d, e, f}, x] && GtQ[p, 0] && LtQ[m, -1]
```

Rubi steps

$$\begin{aligned}
\int \frac{\cot^{-1}(ax)^2}{x^5}\,dx &= -\frac{\cot^{-1}(ax)^2}{4x^4} - \frac{1}{2}a\int \frac{\cot^{-1}(ax)}{x^4\left(1+a^2x^2\right)}\,dx \\
&= -\frac{\cot^{-1}(ax)^2}{4x^4} - \frac{1}{2}a\int \frac{\cot^{-1}(ax)}{x^4}\,dx + \frac{1}{2}a^3\int \frac{\cot^{-1}(ax)}{x^2\left(1+a^2x^2\right)}\,dx \\
&= \frac{a\cot^{-1}(ax)}{6x^3} - \frac{\cot^{-1}(ax)^2}{4x^4} + \frac{1}{6}a^2\int \frac{1}{x^3\left(1+a^2x^2\right)}\,dx + \frac{1}{2}a^3\int \frac{\cot^{-1}(ax)}{x^2}\,dx - \frac{1}{2}a^5\int \frac{\cot^{-1}(ax}{1+a^2x^2} \\
&= \frac{a\cot^{-1}(ax)}{6x^3} - \frac{a^3\cot^{-1}(ax)}{2x} + \frac{1}{4}a^4\cot^{-1}(ax)^2 - \frac{\cot^{-1}(ax)^2}{4x^4} + \frac{1}{12}a^2\,\text{Subst}\left(\int \frac{1}{x^2\left(1+a^2x\right)}\,dx,\right. \\
&= \frac{a\cot^{-1}(ax)}{6x^3} - \frac{a^3\cot^{-1}(ax)}{2x} + \frac{1}{4}a^4\cot^{-1}(ax)^2 - \frac{\cot^{-1}(ax)^2}{4x^4} + \frac{1}{12}a^2\,\text{Subst}\left(\int \left(\frac{1}{x^2} - \frac{a^2}{x} + \frac{a^4}{1+}\right.\right. \\
&= -\frac{a^2}{12x^2} + \frac{a\cot^{-1}(ax)}{6x^3} - \frac{a^3\cot^{-1}(ax)}{2x} + \frac{1}{4}a^4\cot^{-1}(ax)^2 - \frac{\cot^{-1}(ax)^2}{4x^4} - \frac{1}{6}a^4\log(x) + \frac{1}{12}a^4\log \\
&= -\frac{a^2}{12x^2} + \frac{a\cot^{-1}(ax)}{6x^3} - \frac{a^3\cot^{-1}(ax)}{2x} + \frac{1}{4}a^4\cot^{-1}(ax)^2 - \frac{\cot^{-1}(ax)^2}{4x^4} - \frac{2}{3}a^4\log(x) + \frac{1}{3}a^4\log(
\end{aligned}$$

Mathematica [A] time = 0.02, size = 81, normalized size = 0.91

$$\frac{\left(a^4x^4-1\right)\cot^{-1}(ax)^2}{4x^4} - \frac{2}{3}a^4\log(x) - \frac{a^2}{12x^2} - \frac{a\left(3a^2x^2-1\right)\cot^{-1}(ax)}{6x^3} + \frac{1}{3}a^4\log\left(a^2x^2+1\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcCot[a*x]^2/x^5,x]
```

```
[Out] -1/12*a^2/x^2 - (a*(-1 + 3*a^2*x^2)*ArcCot[a*x])/(6*x^3) + ((-1 + a^4*x^4)*
ArcCot[a*x]^2)/(4*x^4) - (2*a^4*Log[x])/3 + (a^4*Log[1 + a^2*x^2])/3
```

fricas [A] time = 0.86, size = 78, normalized size = 0.88

$$\frac{4\,a^4x^4\log\left(a^2x^2+1\right) - 8\,a^4x^4\log(x) - a^2x^2 + 3\left(a^4x^4-1\right)\operatorname{arccot}(ax)^2 - 2\left(3\,a^3x^3-ax\right)\operatorname{arccot}(ax)}{12\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(a*x)^2/x^5,x, algorithm="fricas")
```

```
[Out] 1/12*(4*a^4*x^4*log(a^2*x^2 + 1) - 8*a^4*x^4*log(x) - a^2*x^2 + 3*(a^4*x^4
- 1)*arccot(a*x)^2 - 2*(3*a^3*x^3 - a*x)*arccot(a*x))/x^4
```

giac [A] time = 0.12, size = 91, normalized size = 1.02

$$\frac{1}{12}\left(\left(3\arctan\left(\frac{1}{ax}\right)^2-\frac{6\arctan\left(\frac{1}{ax}\right)}{ax}-\frac{1}{a^2x^2}+\frac{2\arctan\left(\frac{1}{ax}\right)}{a^3x^3}+4\log\left(\frac{1}{a^2x^2}+1\right)\right)a^3-\frac{3\arctan\left(\frac{1}{ax}\right)^2}{ax^4}\right)a$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(a*x)^2/x^5,x, algorithm="giac")
```

```
[Out] 1/12*((3*arctan(1/(a*x))^2 - 6*arctan(1/(a*x))/(a*x) - 1/(a^2*x^2) + 2*arct
an(1/(a*x))/(a^3*x^3) + 4*log(1/(a^2*x^2) + 1))*a^3 - 3*arctan(1/(a*x))^2/(
a*x^4))*a
```

maple [A] time = 0.06, size = 91, normalized size = 1.02

$$-\frac{\operatorname{arccot}(ax)^2}{4x^4}+\frac{a\operatorname{arccot}(ax)}{6x^3}-\frac{a^3\operatorname{arccot}(ax)}{2x}-\frac{a^4\operatorname{arccot}(ax)\arctan(ax)}{2}-\frac{a^2}{12x^2}-\frac{2a^4\ln(ax)}{3}+\frac{a^4\ln\left(a^2x^2+1\right)}{3}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arccot(a*x)^2/x^5,x)
```

```
[Out] -1/4*arccot(a*x)^2/x^4+1/6*a*arccot(a*x)/x^3-1/2*a^3*arccot(a*x)/x-1/2*a^4*
arccot(a*x)*arctan(a*x)-1/12*a^2/x^2-2/3*a^4*ln(a*x)+1/3*a^4*ln(a^2*x^2+1)-
1/4*a^4*arctan(a*x)^2
```

maxima [A] time = 0.43, size = 95, normalized size = 1.07

$$-\frac{1}{6}\left(3\,a^3\arctan(ax)+\frac{3\,a^2x^2-1}{x^3}\right)a\operatorname{arccot}(ax)-\frac{\left(3\,a^2x^2\arctan(ax)^2-4\,a^2x^2\log\left(a^2x^2+1\right)+8\,a^2x^2\log(x)+\right.}{12\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(a*x)^2/x^5,x, algorithm="maxima")
```

```
[Out] -1/6*(3*a^3*arctan(a*x) + (3*a^2*x^2 - 1)/x^3)*a*arccot(a*x) - 1/12*(3*a^2*
x^2*arctan(a*x)^2 - 4*a^2*x^2*log(a^2*x^2 + 1) + 8*a^2*x^2*log(x) + 1)*a^2/
x^2 - 1/4*arccot(a*x)^2/x^4
```

mupad [B] time = 0.70, size = 73, normalized size = 0.82

$$\operatorname{acot}(a\,x)^2\left(\frac{a^4}{4}-\frac{1}{4\,x^4}\right)-\frac{2\,a^4\,\ln(x)}{3}+\frac{a^4\,\ln\left(a^2\,x^2+1\right)}{3}-\frac{a^2}{12\,x^2}-\frac{a^2\operatorname{acot}(a\,x)\left(\frac{a\,x^2}{2}-\frac{1}{6\,a}\right)}{x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(acot(a*x)^2/x^5,x)
```

```
[Out] acot(a*x)^2*(a^4/4 - 1/(4*x^4)) - (2*a^4*log(x))/3 + (a^4*log(a^2*x^2 + 1))
/3 - a^2/(12*x^2) - (a^2*acot(a*x)*((a*x^2)/2 - 1/(6*a)))/x^3
```

sympy [A] time = 0.81, size = 80, normalized size = 0.90

$$-\frac{2a^4\log(x)}{3}+\frac{a^4\log\left(a^2x^2+1\right)}{3}+\frac{a^4\operatorname{acot}^2(ax)}{4}-\frac{a^3\operatorname{acot}(ax)}{2x}-\frac{a^2}{12x^2}+\frac{a\operatorname{acot}(ax)}{6x^3}-\frac{\operatorname{acot}^2(ax)}{4x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(acot(a*x)**2/x**5,x)
```

```
[Out] -2*a**4*log(x)/3 + a**4*log(a**2*x**2 + 1)/3 + a**4*acot(a*x)**2/4 - a**3*a
cot(a*x)/(2*x) - a**2/(12*x**2) + a*acot(a*x)/(6*x**3) - acot(a*x)**2/(4*x*
*4)
```

3.23 $\int x^5 \cot^{-1}(ax)^3 \, dx$

Optimal. Leaf size=194

$$\frac{23i\text{Li}_2\left(1-\frac{2}{iax+1}\right)}{30a^6}+\frac{19\tan^{-1}(ax)}{60a^6}+\frac{\cot^{-1}(ax)^3}{6a^6}+\frac{23i\cot^{-1}(ax)^2}{30a^6}-\frac{23\log\left(\frac{2}{1+iax}\right)\cot^{-1}(ax)}{15a^6}-\frac{19x}{60a^5}+\frac{x\cot^{-1}(ax)^2}{2a^5}-\frac{4x}{}$$

```
[Out] -19/60*x/a^5+1/60*x^3/a^3-4/15*x^2*arccot(a*x)/a^4+1/20*x^4*arccot(a*x)/a^2
+23/30*I*arccot(a*x)^2/a^6+1/2*x*arccot(a*x)^2/a^5-1/6*x^3*arccot(a*x)^2/a^
3+1/10*x^5*arccot(a*x)^2/a+1/6*arccot(a*x)^3/a^6+1/6*x^6*arccot(a*x)^3+19/6
0*arctan(a*x)/a^6-23/15*arccot(a*x)*ln(2/(1+I*a*x))/a^6+23/30*I*polylog(2,1
-2/(1+I*a*x))/a^6
```

Rubi [A] time = 0.67, antiderivative size = 194, normalized size of antiderivative = 1.00, number of steps used = 33, number of rules used = 11, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}$ = 1.100, Rules used = {4853, 4917, 302, 203, 321, 4921, 4855, 2402, 2315, 4847, 4885}

$$\frac{23i\text{PolyLog}\left(2,1-\frac{2}{1+iax}\right)}{30a^6}+\frac{x^3}{60a^3}+\frac{x^4\cot^{-1}(ax)}{20a^2}-\frac{x^3\cot^{-1}(ax)^2}{6a^3}-\frac{4x^2\cot^{-1}(ax)}{15a^4}-\frac{19x}{60a^5}+\frac{19\tan^{-1}(ax)}{60a^6}+\frac{x\cot^{-1}(ax)^2}{2a^5}$$

Antiderivative was successfully verified.

```
[In] Int[x^5*ArcCot[a*x]^3,x]
```

```
[Out] (-19*x)/(60*a^5) + x^3/(60*a^3) - (4*x^2*ArcCot[a*x])/(15*a^4) + (x^4*ArcCo
t[a*x])/(20*a^2) + (((23*I)/30)*ArcCot[a*x]^2)/a^6 + (x*ArcCot[a*x]^2)/(2*a
^5) - (x^3*ArcCot[a*x]^2)/(6*a^3) + (x^5*ArcCot[a*x]^2)/(10*a) + ArcCot[a*x
]^3/(6*a^6) + (x^6*ArcCot[a*x]^3)/6 + (19*ArcTan[a*x])/(60*a^6) - (23*ArcCo
t[a*x]*Log[2/(1 + I*a*x)])/(15*a^6) + (((23*I)/30)*PolyLog[2, 1 - 2/(1 + I*
a*x)])/a^6
```

Rule 203

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

Rule 302

```
Int[(x_)^(m_)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Int[PolynomialDivide[x
^m, a + b*x^n, x], x] /; FreeQ[{a, b}, x] && IGtQ[m, 0] && IGtQ[n, 0] && Gt
Q[m, 2*n - 1]
```

Rule 321

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

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2402

```
Int[Log[(c_.)/((d_) + (e_.)*(x_))]/((f_) + (g_.)*(x_)^2), x_Symbol] :> -Dis
t[e/g, Subst[Int[Log[2*d*x]/(1 - 2*d*x), x], x, 1/(d + e*x)], x] /; FreeQ[{
c, d, e, f, g}, x] && EqQ[c, 2*d] && EqQ[e^2*f + d^2*g, 0]
```

Rule 4847

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b*Ar
cCot[c*x])^p, x] + Dist[b*c*p, Int[(x*(a + b*ArcCot[c*x])^(p - 1))/(1 + c^2
*x^2), x], x] /; FreeQ[{a, b, c}, x] && IGtQ[p, 0]
```

Rule 4853

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcCot[c*x])^p)/(d*(m + 1)), x] + Dist[(b*c*p
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcCot[c*x])^(p - 1))/(1 + c^2*x^2
), x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[p, 0] && (EqQ[p, 1] || Integ
erQ[m]) && NeQ[m, -1]
```

Rule 4855

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symbol]
 :> -Simp[((a + b*ArcCot[c*x])^p*Log[2/(1 + (e*x)/d)])/e, x] - Dist[(b*c*p)
/e, Int[((a + b*ArcCot[c*x])^(p - 1)*Log[2/(1 + (e*x)/d)])/(1 + c^2*x^2), x
], x] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[p, 0] && EqQ[c^2*d^2 + e^2, 0]
```

Rule 4885

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)^2), x_Symbo
l] :> -Simp[(a + b*ArcCot[c*x])^(p + 1)/(b*c*d*(p + 1)), x] /; FreeQ[{a, b,
 c, d, e, p}, x] && EqQ[e, c^2*d] && NeQ[p, -1]
```

Rule 4917

```
Int[(((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)*((f_.)*(x_))^(m_))/((d_) + (e
_.)*(x_)^2), x_Symbol] :> Dist[f^2/e, Int[(f*x)^(m - 2)*(a + b*ArcCot[c*x])
^p, x], x] - Dist[(d*f^2)/e, Int[((f*x)^(m - 2)*(a + b*ArcCot[c*x])^p)/(d +
 e*x^2), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && GtQ[p, 0] && GtQ[m, 1]
```

Rule 4921

```
Int[(((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)*(x_))/((d_) + (e_.)*(x_)^2),
x_Symbol] :> Simp[(I*(a + b*ArcCot[c*x])^(p + 1))/(b*e*(p + 1)), x] - Dist[
1/(c*d), Int[(a + b*ArcCot[c*x])^p/(I - c*x), x], x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[e, c^2*d] && IGtQ[p, 0]
```

Rubi steps

$$\int x^5 \cot^{-1}(ax)^3\,dx = \frac{1}{6}x^6\cot^{-1}(ax)^3 + \frac{1}{2}a\int \frac{x^6\cot^{-1}(ax)^2}{1+a^2x^2}\,dx$$

$$= \frac{1}{6}x^6\cot^{-1}(ax)^3 + \frac{\int x^4\cot^{-1}(ax)^2\,dx}{2a} - \frac{\int \frac{x^4\cot^{-1}(ax)^2}{1+a^2x^2}\,dx}{2a}$$

$$= \frac{x^5\cot^{-1}(ax)^2}{10a} + \frac{1}{6}x^6\cot^{-1}(ax)^3 + \frac{1}{5}\int \frac{x^5\cot^{-1}(ax)}{1+a^2x^2}\,dx - \frac{\int x^2\cot^{-1}(ax)^2\,dx}{2a^3} + \frac{\int \frac{x^2\cot^{-1}(ax)}{1+a^2x^2}}{2a^3}$$

$$= -\frac{x^3\cot^{-1}(ax)^2}{6a^3} + \frac{x^5\cot^{-1}(ax)^2}{10a} + \frac{1}{6}x^6\cot^{-1}(ax)^3 + \frac{\int \cot^{-1}(ax)^2\,dx}{2a^5} - \frac{\int \frac{\cot^{-1}(ax)^2}{1+a^2x^2}\,dx}{2a^5} + \frac{\int x}{}$$

$$= \frac{x^4\cot^{-1}(ax)}{20a^2} + \frac{x\cot^{-1}(ax)^2}{2a^5} - \frac{x^3\cot^{-1}(ax)^2}{6a^3} + \frac{x^5\cot^{-1}(ax)^2}{10a} + \frac{\cot^{-1}(ax)^3}{6a^6} + \frac{1}{6}x^6\cot^{-1}(ax)$$

$$= -\frac{4x^2\cot^{-1}(ax)}{15a^4} + \frac{x^4\cot^{-1}(ax)}{20a^2} + \frac{23i\cot^{-1}(ax)^2}{30a^6} + \frac{x\cot^{-1}(ax)^2}{2a^5} - \frac{x^3\cot^{-1}(ax)^2}{6a^3} + \frac{x^5\cot^{-1}}{10a}$$

$$= -\frac{19x}{60a^5} + \frac{x^3}{60a^3} - \frac{4x^2\cot^{-1}(ax)}{15a^4} + \frac{x^4\cot^{-1}(ax)}{20a^2} + \frac{23i\cot^{-1}(ax)^2}{30a^6} + \frac{x\cot^{-1}(ax)^2}{2a^5} - \frac{x^3\cot^{-1}(}{6a^3}$$

$$= -\frac{19x}{60a^5} + \frac{x^3}{60a^3} - \frac{4x^2\cot^{-1}(ax)}{15a^4} + \frac{x^4\cot^{-1}(ax)}{20a^2} + \frac{23i\cot^{-1}(ax)^2}{30a^6} + \frac{x\cot^{-1}(ax)^2}{2a^5} - \frac{x^3\cot^{-1}(}{6a^3}$$

$$= -\frac{19x}{60a^5} + \frac{x^3}{60a^3} - \frac{4x^2\cot^{-1}(ax)}{15a^4} + \frac{x^4\cot^{-1}(ax)}{20a^2} + \frac{23i\cot^{-1}(ax)^2}{30a^6} + \frac{x\cot^{-1}(ax)^2}{2a^5} - \frac{x^3\cot^{-1}(}{6a^3}$$

Mathematica [A] time = 0.69, size = 125, normalized size = 0.64

$$\frac{10\left(a^6x^6+1\right)\cot^{-1}(ax)^3 + ax\left(a^2x^2-19\right) + 2\left(3a^5x^5-5a^3x^3+15ax+23i\right)\cot^{-1}(ax)^2 + \cot^{-1}(ax)\left(3a^4x^4-16a^2\right.}{60a^6}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[x^5*ArcCot[a*x]^3,x]
```

```
[Out] (a*x*(-19 + a^2*x^2) + 2*(23*I + 15*a*x - 5*a^3*x^3 + 3*a^5*x^5)*ArcCot[a*x
]^2 + 10*(1 + a^6*x^6)*ArcCot[a*x]^3 + ArcCot[a*x]*(-19 - 16*a^2*x^2 + 3*a^
4*x^4 - 92*Log[1 - E^((2*I)*ArcCot[a*x])]) + (46*I)*PolyLog[2, E^((2*I)*Arc
Cot[a*x])])/(60*a^6)
```

fricas [F] time = 0.98, size = 0, normalized size = 0.00

$$\text{integral}\left(x^5\,\text{arccot}\,(ax)^3\,,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*arccot(a*x)^3,x, algorithm="fricas")
```

```
[Out] integral(x^5*arccot(a*x)^3, x)
```

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

$$\int x^5\,\text{arccot}\,(ax)^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*arccot(a*x)^3,x, algorithm="giac")
```

```
[Out] integrate(x^5*arccot(a*x)^3, x)
```

maple [A] time = 1.88, size = 243, normalized size = 1.25

$$\frac{x^6 \operatorname{arccot}(ax)^3}{6} + \frac{\operatorname{arccot}(ax)^3}{6a^6} + \frac{x^5 \operatorname{arccot}(ax)^2}{10a} - \frac{x^3 \operatorname{arccot}(ax)^2}{6a^3} + \frac{x^4 \operatorname{arccot}(ax)}{20a^2} - \frac{4x^2 \operatorname{arccot}(ax)}{15a^4} + \frac{x \operatorname{arccot}(ax)^2}{2a^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^5*arccot(a*x)^3,x)
```

```
[Out] 1/6*x^6*arccot(a*x)^3+1/6*arccot(a*x)^3/a^6+1/10*x^5*arccot(a*x)^2/a-1/6*x^
3*arccot(a*x)^2/a^3+1/20*x^4*arccot(a*x)/a^2-4/15*x^2*arccot(a*x)/a^4+1/2*x
*arccot(a*x)^2/a^5+1/60*x^3/a^3-19/60*x/a^5+23/15*I/a^6*polylog(2,-(I+a*x)/
(a^2*x^2+1)^(1/2))-19/60/a^6*arccot(a*x)+23/15*I/a^6*polylog(2,(I+a*x)/(a^2
*x^2+1)^(1/2))-23/15/a^6*arccot(a*x)*ln(1+(I+a*x)/(a^2*x^2+1)^(1/2))+1/3*I/
a^6-23/15/a^6*arccot(a*x)*ln(1-(I+a*x)/(a^2*x^2+1)^(1/2))+23/30*I*arccot(a*
x)^2/a^6
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*arccot(a*x)^3,x, algorithm="maxima")
```

```
[Out] Timed out
```

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

$$\int x^5 \operatorname{acot}(a\,x)^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^5*acot(a*x)^3,x)
```

```
[Out] int(x^5*acot(a*x)^3, x)
```

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

$$\int x^5 \operatorname{acot}^3(ax)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**5*acot(a*x)**3,x)
```

```
[Out] Integral(x**5*acot(a*x)**3, x)
```

3.24 $\int x^4 \cot^{-1}(ax)^3 \, dx$

Optimal. Leaf size=205

$$-\frac{3\text{Li}_3\left(1-\frac{2}{iax+1}\right)}{10a^5}+\frac{3i\text{Li}_2\left(1-\frac{2}{iax+1}\right)\cot^{-1}(ax)}{5a^5}+\frac{i\cot^{-1}(ax)^3}{5a^5}-\frac{9\cot^{-1}(ax)^2}{20a^5}-\frac{3\log\left(\frac{2}{1+iax}\right)\cot^{-1}(ax)^2}{5a^5}-\frac{9x\cot^{-1}(ax}{10a^4}$$

```
[Out] 1/20*x^2/a^3-9/10*x*arccot(a*x)/a^4+1/10*x^3*arccot(a*x)/a^2-9/20*arccot(a*
x)^2/a^5-3/10*x^2*arccot(a*x)^2/a^3+3/20*x^4*arccot(a*x)^2/a+1/5*I*arccot(a
*x)^3/a^5+1/5*x^5*arccot(a*x)^3-3/5*arccot(a*x)^2*ln(2/(1+I*a*x))/a^5-1/2*l
n(a^2*x^2+1)/a^5+3/5*I*arccot(a*x)*polylog(2,1-2/(1+I*a*x))/a^5-3/10*polylo
g(3,1-2/(1+I*a*x))/a^5
```

Rubi [A] time = 0.52, antiderivative size = 205, normalized size of antiderivative = 1.00, number of steps used = 22, number of rules used = 11, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}$ = 1.100, Rules used = {4853, 4917, 266, 43, 4847, 260, 4885, 4921, 4855, 4995, 6610}

$$-\frac{3\text{PolyLog}\left(3,1-\frac{2}{1+iax}\right)}{10a^5}+\frac{3i\cot^{-1}(ax)\text{PolyLog}\left(2,1-\frac{2}{1+iax}\right)}{5a^5}+\frac{x^2}{20a^3}-\frac{\log\left(a^2x^2+1\right)}{2a^5}+\frac{x^3\cot^{-1}(ax)}{10a^2}-\frac{3x^2\cot^{-1}(a}{10a^3}$$

Antiderivative was successfully verified.

```
[In] Int[x^4*ArcCot[a*x]^3,x]
```

```
[Out] x^2/(20*a^3) - (9*x*ArcCot[a*x])/(10*a^4) + (x^3*ArcCot[a*x])/(10*a^2) - (9
*ArcCot[a*x]^2)/(20*a^5) - (3*x^2*ArcCot[a*x]^2)/(10*a^3) + (3*x^4*ArcCot[a
*x]^2)/(20*a) + ((I/5)*ArcCot[a*x]^3)/a^5 + (x^5*ArcCot[a*x]^3)/5 - (3*ArcC
ot[a*x]^2*Log[2/(1 + I*a*x)])/(5*a^5) - Log[1 + a^2*x^2]/(2*a^5) + (((3*I)/
5)*ArcCot[a*x]*PolyLog[2, 1 - 2/(1 + I*a*x)])/a^5 - (3*PolyLog[3, 1 - 2/(1
+ I*a*x)])/(10*a^5)
```

Rule 43

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

Rule 260

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

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 4847

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b*Ar
cCot[c*x])^p, x] + Dist[b*c*p, Int[(x*(a + b*ArcCot[c*x])^(p - 1))/(1 + c^2
*x^2), x], x] /; FreeQ[{a, b, c}, x] && IGtQ[p, 0]
```

Rule 4853

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcCot[c*x])^p)/(d*(m + 1)), x] + Dist[(b*c*p
```

```
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcCot[c*x])^(p - 1))/(1 + c^2*x^2
), x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[p, 0] && (EqQ[p, 1] || Integ
erQ[m]) && NeQ[m, -1]
```

Rule 4855

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symbol]
 :> -Simp[((a + b*ArcCot[c*x])^p*Log[2/(1 + (e*x)/d)])/e, x] - Dist[(b*c*p)
/e, Int[((a + b*ArcCot[c*x])^(p - 1)*Log[2/(1 + (e*x)/d)])/(1 + c^2*x^2), x
], x] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[p, 0] && EqQ[c^2*d^2 + e^2, 0]
```

Rule 4885

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)^2), x_Symbo
l] :> -Simp[(a + b*ArcCot[c*x])^(p + 1)/(b*c*d*(p + 1)), x] /; FreeQ[{a, b,
 c, d, e, p}, x] && EqQ[e, c^2*d] && NeQ[p, -1]
```

Rule 4917

```
Int[(((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)*((f_.)*(x_))^(m_))/((d_) + (e
_.)*(x_)^2), x_Symbol] :> Dist[f^2/e, Int[(f*x)^(m - 2)*(a + b*ArcCot[c*x])
^p, x], x] - Dist[(d*f^2)/e, Int[((f*x)^(m - 2)*(a + b*ArcCot[c*x])^p)/(d +
 e*x^2), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && GtQ[p, 0] && GtQ[m, 1]
```

Rule 4921

```
Int[(((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)*(x_))/((d_) + (e_.)*(x_)^2),
x_Symbol] :> Simp[(I*(a + b*ArcCot[c*x])^(p + 1))/(b*e*(p + 1)), x] - Dist[
1/(c*d), Int[(a + b*ArcCot[c*x])^p/(I - c*x), x], x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[e, c^2*d] && IGtQ[p, 0]
```

Rule 4995

```
Int[(Log[u_]*((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.))/((d_) + (e_.)*(x_)^2
), x_Symbol] :> -Simp[(I*(a + b*ArcCot[c*x])^p*PolyLog[2, 1 - u])/(2*c*d),
x] - Dist[(b*p*I)/2, Int[((a + b*ArcCot[c*x])^(p - 1)*PolyLog[2, 1 - u])/(d
 + e*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[p, 0] && EqQ[e, c^2*
d] && EqQ[(1 - u)^2 - (1 - (2*I)/(I - c*x))^2, 0]
```

Rule 6610

```
Int[(u_)*PolyLog[n_, v_], x_Symbol] :> With[{w = DerivativeDivides[v, u*v,
x]}, Simp[w*PolyLog[n + 1, v], x] /;  !FalseQ[w]] /; FreeQ[n, x]
```

Rubi steps

$$\int x^4 \cot^{-1}(ax)^3\,dx = \frac{1}{5}x^5\cot^{-1}(ax)^3 + \frac{1}{5}(3a)\int \frac{x^5\cot^{-1}(ax)^2}{1+a^2x^2}\,dx$$
$$= \frac{1}{5}x^5\cot^{-1}(ax)^3 + \frac{3\int x^3\cot^{-1}(ax)^2\,dx}{5a} - \frac{3\int \frac{x^3\cot^{-1}(ax)^2}{1+a^2x^2}\,dx}{5a}$$
$$= \frac{3x^4\cot^{-1}(ax)^2}{20a} + \frac{1}{5}x^5\cot^{-1}(ax)^3 + \frac{3}{10}\int \frac{x^4\cot^{-1}(ax)}{1+a^2x^2}\,dx - \frac{3\int x\cot^{-1}(ax)^2\,dx}{5a^3} + \frac{3\int \frac{x\cot^{-1}}{1+a}}{5a}$$
$$= -\frac{3x^2\cot^{-1}(ax)^2}{10a^3} + \frac{3x^4\cot^{-1}(ax)^2}{20a} + \frac{i\cot^{-1}(ax)^3}{5a^5} + \frac{1}{5}x^5\cot^{-1}(ax)^3 - \frac{3\int \frac{\cot^{-1}(ax)^2}{i-ax}\,dx}{5a^4} + 3\int$$
$$= \frac{x^3\cot^{-1}(ax)}{10a^2} - \frac{3x^2\cot^{-1}(ax)^2}{10a^3} + \frac{3x^4\cot^{-1}(ax)^2}{20a} + \frac{i\cot^{-1}(ax)^3}{5a^5} + \frac{1}{5}x^5\cot^{-1}(ax)^3 - \frac{3\cot^{-1}(}{}$$
$$= -\frac{9x\cot^{-1}(ax)}{10a^4} + \frac{x^3\cot^{-1}(ax)}{10a^2} - \frac{9\cot^{-1}(ax)^2}{20a^5} - \frac{3x^2\cot^{-1}(ax)^2}{10a^3} + \frac{3x^4\cot^{-1}(ax)^2}{20a} + \frac{i\cot^{-1}(}{5a^5}$$
$$= -\frac{9x\cot^{-1}(ax)}{10a^4} + \frac{x^3\cot^{-1}(ax)}{10a^2} - \frac{9\cot^{-1}(ax)^2}{20a^5} - \frac{3x^2\cot^{-1}(ax)^2}{10a^3} + \frac{3x^4\cot^{-1}(ax)^2}{20a} + \frac{i\cot^{-1}(}{5a^5}$$
$$= \frac{x^2}{20a^3} - \frac{9x\cot^{-1}(ax)}{10a^4} + \frac{x^3\cot^{-1}(ax)}{10a^2} - \frac{9\cot^{-1}(ax)^2}{20a^5} - \frac{3x^2\cot^{-1}(ax)^2}{10a^3} + \frac{3x^4\cot^{-1}(ax)^2}{20a} + \frac{i}{}$$

Mathematica [A] time = 0.64, size = 184, normalized size = 0.90

$$\frac{8a^5x^5\cot^{-1}(ax)^3 + 6a^4x^4\cot^{-1}(ax)^2 + 4a^3x^3\cot^{-1}(ax) + 2a^2x^2 + 40\log\left(\frac{1}{ax\sqrt{\frac{1}{a^2x^2}+1}}\right) - 12a^2x^2\cot^{-1}(ax)^2 - 24i\,c}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[x^4*ArcCot[a*x]^3,x]
```

```
[Out] (2 + I*Pi^3 + 2*a^2*x^2 - 36*a*x*ArcCot[a*x] + 4*a^3*x^3*ArcCot[a*x] - 18*A
rcCot[a*x]^2 - 12*a^2*x^2*ArcCot[a*x]^2 + 6*a^4*x^4*ArcCot[a*x]^2 - (8*I)*A
rcCot[a*x]^3 + 8*a^5*x^5*ArcCot[a*x]^3 - 24*ArcCot[a*x]^2*Log[1 - E^((-2*I)
*ArcCot[a*x])] + 40*Log[1/(a*Sqrt[1 + 1/(a^2*x^2)]*x)] - (24*I)*ArcCot[a*x]
*PolyLog[2, E^((-2*I)*ArcCot[a*x])] - 12*PolyLog[3, E^((-2*I)*ArcCot[a*x])]
)/(40*a^5)
```

fricas [F] time = 1.13, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(x^4\operatorname{arccot}(ax)^3, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*arccot(a*x)^3,x, algorithm="fricas")
```

```
[Out] integral(x^4*arccot(a*x)^3, x)
```

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

$$\int x^4\operatorname{arccot}(ax)^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*arccot(a*x)^3,x, algorithm="giac")
```

```
[Out] integrate(x^4*arccot(a*x)^3, x)
```

maple [C] time = 6.14, size = 2731, normalized size = 13.32

Expression too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*arccot(a*x)^3,x)
```

```
[Out] 1/20/a^5+1/5*x^5*arccot(a*x)^3+1/20*x^2/a^3-9/10*x*arccot(a*x)/a^4+1/10*x^3
*arccot(a*x)/a^2-3/10*x^2*arccot(a*x)^2/a^3+3/20*x^4*arccot(a*x)^2/a+9/160*
I/a^3*csgn(I*((I+a*x)^2/(a^2*x^2+1)-1)^2)^3*arccot(a*x)^2*Pi*x^2-3/10*I/a^5
*arccot(a*x)^2*Pi+6/5*I/a^5*arccot(a*x)*polylog(2,-(I+a*x)/(a^2*x^2+1)^(1/2
))+6/5*I/a^5*arccot(a*x)*polylog(2,(I+a*x)/(a^2*x^2+1)^(1/2))+1/5*I*arccot(
a*x)^3/a^5-9/80*I/a^3*csgn(I*((I+a*x)^2/(a^2*x^2+1)-1)^2)^2*csgn(I*((I+a*x)
^2/(a^2*x^2+1)-1))*arccot(a*x)^2*Pi*x^2+9/160*I/a^3*csgn(I*((I+a*x)^2/(a^2*
x^2+1)-1)^2)*csgn(I*((I+a*x)^2/(a^2*x^2+1)-1))^2*arccot(a*x)^2*Pi*x^2+3/20*
I/a^5*csgn(I*(I+a*x)^2/(a^2*x^2+1))*csgn(I*(I+a*x)^2/(a^2*x^2+1)/((I+a*x)^2
/(a^2*x^2+1)-1)^2)*csgn(I/((I+a*x)^2/(a^2*x^2+1)-1)^2)*arccot(a*x)^2*Pi+9/1
60/a^4*csgn(-I*(I+a*x)^4/(a^2*x^2+1)^2+2*I*(I+a*x)^2/(a^2*x^2+1)-I)^3*arcco
t(a*x)^2*Pi*x-3/160/a^2*csgn(-I*(I+a*x)^4/(a^2*x^2+1)^2+2*I*(I+a*x)^2/(a^2*
x^2+1)-I)^3*arccot(a*x)^2*Pi*x^3+9/160/a^4*arccot(a*x)^2*csgn(I*((I+a*x)^2/
(a^2*x^2+1)-1)^2)^3*Pi*x+3/20*I/a^5*csgn(I*(I+a*x)^2/(a^2*x^2+1))^3*arccot(
a*x)^2*Pi+21/160*I/a^5*csgn(-I*(I+a*x)^4/(a^2*x^2+1)^2+2*I*(I+a*x)^2/(a^2*x
^2+1)-I)^3*arccot(a*x)^2*Pi-3/160*I/a^5*csgn(I*((I+a*x)^2/(a^2*x^2+1)-1)^2)
^3*arccot(a*x)^2*Pi+9/80*I/a^3*csgn(-I*(I+a*x)^4/(a^2*x^2+1)^2+2*I*(I+a*x)^
2/(a^2*x^2+1)-I)^2*csgn(I*(I+a*x)^2/(a^2*x^2+1)-I)*arccot(a*x)^2*Pi*x^2+9/1
60*I/a^3*csgn(-I*(I+a*x)^4/(a^2*x^2+1)^2+2*I*(I+a*x)^2/(a^2*x^2+1)-I)*csgn(
I*(I+a*x)^2/(a^2*x^2+1)-I)^2*arccot(a*x)^2*Pi*x^2+3/5/a^5*arccot(a*x)^2*ln(
(I+a*x)^2/(a^2*x^2+1)-1)-3/5/a^5*arccot(a*x)^2*ln(1+(I+a*x)/(a^2*x^2+1)^(1/
2))-3/5/a^5*arccot(a*x)^2*ln(1-(I+a*x)/(a^2*x^2+1)^(1/2))+3/10/a^5*arccot(a
*x)^2*ln(a^2*x^2+1)-3/5/a^5*arccot(a*x)^2*ln((I+a*x)/(a^2*x^2+1)^(1/2))-3/5
/a^5*ln(2)*arccot(a*x)^2-I/a^5*arccot(a*x)-6/5/a^5*polylog(3,-(I+a*x)/(a^2*
x^2+1)^(1/2))-6/5/a^5*polylog(3,(I+a*x)/(a^2*x^2+1)^(1/2))+1/a^5*ln(1+(I+a*
x)/(a^2*x^2+1)^(1/2))+1/a^5*ln((I+a*x)/(a^2*x^2+1)^(1/2)-1)-3/160/a^2*arcco
t(a*x)^2*csgn(I*((I+a*x)^2/(a^2*x^2+1)-1)^2)^3*Pi*x^3-3/160/a^2*arccot(a*x)
^2*csgn(I*((I+a*x)^2/(a^2*x^2+1)-1)^2)*csgn(I*((I+a*x)^2/(a^2*x^2+1)-1))^2*
Pi*x^3+9/80/a^4*csgn(-I*(I+a*x)^4/(a^2*x^2+1)^2+2*I*(I+a*x)^2/(a^2*x^2+1)-I
)^2*csgn(I*(I+a*x)^2/(a^2*x^2+1)-I)*arccot(a*x)^2*Pi*x+9/160/a^4*csgn(-I*(I
+a*x)^4/(a^2*x^2+1)^2+2*I*(I+a*x)^2/(a^2*x^2+1)-I)*csgn(I*(I+a*x)^2/(a^2*x^
2+1)-I)^2*arccot(a*x)^2*Pi*x-3/80/a^2*csgn(-I*(I+a*x)^4/(a^2*x^2+1)^2+2*I*(
I+a*x)^2/(a^2*x^2+1)-I)^2*csgn(I*(I+a*x)^2/(a^2*x^2+1)-I)*arccot(a*x)^2*Pi*
x^3-3/160/a^2*csgn(-I*(I+a*x)^4/(a^2*x^2+1)^2+2*I*(I+a*x)^2/(a^2*x^2+1)-I)*
csgn(I*(I+a*x)^2/(a^2*x^2+1)-I)^2*arccot(a*x)^2*Pi*x^3-9/80/a^4*arccot(a*x)
^2*csgn(I*((I+a*x)^2/(a^2*x^2+1)-1)^2)^2*csgn(I*((I+a*x)^2/(a^2*x^2+1)-1))*
Pi*x+3/80/a^2*arccot(a*x)^2*csgn(I*((I+a*x)^2/(a^2*x^2+1)-1)^2)^2*csgn(I*((
I+a*x)^2/(a^2*x^2+1)-1))*Pi*x^3+9/160/a^4*arccot(a*x)^2*csgn(I*((I+a*x)^2/(
a^2*x^2+1)-1)^2)*csgn(I*((I+a*x)^2/(a^2*x^2+1)-1))^2*Pi*x+3/20*I/a^5*csgn(I
*(I+a*x)/(a^2*x^2+1)^(1/2))^2*csgn(I*(I+a*x)^2/(a^2*x^2+1))*arccot(a*x)^2*P
i-3/10*I/a^5*csgn(I*(I+a*x)/(a^2*x^2+1)^(1/2))*csgn(I*(I+a*x)^2/(a^2*x^2+1)
)^2*arccot(a*x)^2*Pi-3/20*I/a^5*csgn(I*(I+a*x)^2/(a^2*x^2+1))*csgn(I*(I+a*x
)^2/(a^2*x^2+1)/((I+a*x)^2/(a^2*x^2+1)-1)^2)^2*arccot(a*x)^2*Pi+21/80*I/a^5
*csgn(-I*(I+a*x)^4/(a^2*x^2+1)^2+2*I*(I+a*x)^2/(a^2*x^2+1)-I)^2*csgn(I*(I+a
*x)^2/(a^2*x^2+1)-I)*arccot(a*x)^2*Pi+21/160*I/a^5*csgn(-I*(I+a*x)^4/(a^2*x
^2+1)^2+2*I*(I+a*x)^2/(a^2*x^2+1)-I)*csgn(I*(I+a*x)^2/(a^2*x^2+1)-I)^2*arcc
ot(a*x)^2*Pi+3/80*I/a^5*csgn(I*((I+a*x)^2/(a^2*x^2+1)-1)^2)^2*csgn(I*((I+a*
x)^2/(a^2*x^2+1)-1))*arccot(a*x)^2*Pi-3/160*I/a^5*csgn(I*((I+a*x)^2/(a^2*x^
2+1)-1)^2)*csgn(I*((I+a*x)^2/(a^2*x^2+1)-1))^2*arccot(a*x)^2*Pi-3/20*I/a^5*
```

```
csgn(I*(I+a*x)^2/(a^2*x^2+1)/((I+a*x)^2/(a^2*x^2+1)-1)^2)^2*csgn(I/((I+a*x)
^2/(a^2*x^2+1)-1)^2)*arccot(a*x)^2*Pi+9/160*I/a^3*csgn(-I*(I+a*x)^4/(a^2*x^
2+1)^2+2*I*(I+a*x)^2/(a^2*x^2+1)-I)^3*arccot(a*x)^2*Pi*x^2-3/20*I/a^5*csgn(
I*(I+a*x)^2/(a^2*x^2+1)/((I+a*x)^2/(a^2*x^2+1)-1)^2)^3*arccot(a*x)^2*Pi+3/1
0*I/a^5*csgn(I*(I+a*x)^2/(a^2*x^2+1)/((I+a*x)^2/(a^2*x^2+1)-1)^2)^2*arccot(
a*x)^2*Pi-9/20*arccot(a*x)^2/a^5
```

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

$$\frac{1}{40}x^5\arctan(1,ax)^3 - \frac{3}{160}x^5\arctan(1,ax)\log\left(a^2x^2+1\right)^2 + \int \frac{140\,a^2x^6\arctan(1,ax)^3 + 12\,a^2x^6\arctan(1,ax)\,\mathrm{lo}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*arccot(a*x)^3,x, algorithm="maxima")
```

```
[Out] 1/40*x^5*arctan2(1, a*x)^3 - 3/160*x^5*arctan2(1, a*x)*log(a^2*x^2 + 1)^2 +
 integrate(1/160*(140*a^2*x^6*arctan2(1, a*x)^3 + 12*a^2*x^6*arctan2(1, a*x
)*log(a^2*x^2 + 1) + 12*a*x^5*arctan2(1, a*x)^2 + 140*x^4*arctan2(1, a*x)^3
 + 3*(5*a^2*x^6*arctan2(1, a*x) - a*x^5 + 5*x^4*arctan2(1, a*x))*log(a^2*x^
2 + 1)^2)/(a^2*x^2 + 1), x)
```

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

$$\int x^4\,\mathrm{acot}\left(a\,x\right)^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*acot(a*x)^3,x)
```

```
[Out] int(x^4*acot(a*x)^3, x)
```

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

$$\int x^4\,\mathrm{acot}^3(ax)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*acot(a*x)**3,x)
```

```
[Out] Integral(x**4*acot(a*x)**3, x)
```

3.25 $\int x^3 \cot^{-1}(ax)^3 \, dx$

Optimal. Leaf size=148

$$-\frac{i\text{Li}_2\left(1-\frac{2}{iax+1}\right)}{a^4}-\frac{\tan^{-1}(ax)}{4a^4}-\frac{\cot^{-1}(ax)^3}{4a^4}-\frac{i\cot^{-1}(ax)^2}{a^4}+\frac{2\log\left(\frac{2}{1+iax}\right)\cot^{-1}(ax)}{a^4}+\frac{x}{4a^3}-\frac{3x\cot^{-1}(ax)^2}{4a^3}+\frac{x^2\cot^{-}}{4a^{}}$$

```
[Out] 1/4*x/a^3+1/4*x^2*arccot(a*x)/a^2-I*arccot(a*x)^2/a^4-3/4*x*arccot(a*x)^2/a
^3+1/4*x^3*arccot(a*x)^2/a-1/4*arccot(a*x)^3/a^4+1/4*x^4*arccot(a*x)^3-1/4*
arctan(a*x)/a^4+2*arccot(a*x)*ln(2/(1+I*a*x))/a^4-I*polylog(2,1-2/(1+I*a*x)
)/a^4
```

Rubi [A] time = 0.39, antiderivative size = 148, normalized size of antiderivative = 1.00, number of steps used = 18, number of rules used = 10, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}$ = 1.000, Rules used = {4853, 4917, 321, 203, 4921, 4855, 2402, 2315, 4847, 4885}

$$-\frac{i\text{PolyLog}\left(2,1-\frac{2}{1+iax}\right)}{a^4}+\frac{x^2\cot^{-1}(ax)}{4a^2}+\frac{x}{4a^3}-\frac{\tan^{-1}(ax)}{4a^4}-\frac{3x\cot^{-1}(ax)^2}{4a^3}-\frac{\cot^{-1}(ax)^3}{4a^4}-\frac{i\cot^{-1}(ax)^2}{a^4}+\frac{2\log\left(\frac{2}{1+i}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[x^3*ArcCot[a*x]^3,x]
```

```
[Out] x/(4*a^3) + (x^2*ArcCot[a*x])/(4*a^2) - (I*ArcCot[a*x]^2)/a^4 - (3*x*ArcCot
[a*x]^2)/(4*a^3) + (x^3*ArcCot[a*x]^2)/(4*a) - ArcCot[a*x]^3/(4*a^4) + (x^4
*ArcCot[a*x]^3)/4 - ArcTan[a*x]/(4*a^4) + (2*ArcCot[a*x]*Log[2/(1 + I*a*x)]
)/a^4 - (I*PolyLog[2, 1 - 2/(1 + I*a*x)])/a^4
```

Rule 203

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

Rule 321

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

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2402

```
Int[Log[(c_.)/((d_) + (e_.)*(x_))]/((f_) + (g_.)*(x_)^2), x_Symbol] :> -Dis
t[e/g, Subst[Int[Log[2*d*x]/(1 - 2*d*x), x], x, 1/(d + e*x)], x] /; FreeQ[{
c, d, e, f, g}, x] && EqQ[c, 2*d] && EqQ[e^2*f + d^2*g, 0]
```

Rule 4847

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b*Ar
cCot[c*x])^p, x] + Dist[b*c*p, Int[(x*(a + b*ArcCot[c*x])^(p - 1))/(1 + c^2
*x^2), x], x] /; FreeQ[{a, b, c}, x] && IGtQ[p, 0]
```

Rule 4853

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcCot[c*x])^p)/(d*(m + 1)), x] + Dist[(b*c*p
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcCot[c*x])^(p - 1))/(1 + c^2*x^2
), x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[p, 0] && (EqQ[p, 1] || Integ
erQ[m]) && NeQ[m, -1]
```

Rule 4855

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symbol]
 :> -Simp[((a + b*ArcCot[c*x])^p*Log[2/(1 + (e*x)/d)])/e, x] - Dist[(b*c*p)
/e, Int[((a + b*ArcCot[c*x])^(p - 1)*Log[2/(1 + (e*x)/d)])/(1 + c^2*x^2), x
], x] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[p, 0] && EqQ[c^2*d^2 + e^2, 0]
```

Rule 4885

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)^2), x_Symbo
l] :> -Simp[(a + b*ArcCot[c*x])^(p + 1)/(b*c*d*(p + 1)), x] /; FreeQ[{a, b,
 c, d, e, p}, x] && EqQ[e, c^2*d] && NeQ[p, -1]
```

Rule 4917

```
Int[(((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)*((f_.)*(x_))^(m_))/((d_) + (e
_.)*(x_)^2), x_Symbol] :> Dist[f^2/e, Int[(f*x)^(m - 2)*(a + b*ArcCot[c*x])
^p, x], x] - Dist[(d*f^2)/e, Int[((f*x)^(m - 2)*(a + b*ArcCot[c*x])^p)/(d +
 e*x^2), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && GtQ[p, 0] && GtQ[m, 1]
```

Rule 4921

```
Int[(((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)*(x_))/((d_) + (e_.)*(x_)^2),
x_Symbol] :> Simp[(I*(a + b*ArcCot[c*x])^(p + 1))/(b*e*(p + 1)), x] - Dist[
1/(c*d), Int[(a + b*ArcCot[c*x])^p/(I - c*x), x], x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[e, c^2*d] && IGtQ[p, 0]
```

Rubi steps

$$\int x^3 \cot^{-1}(ax)^3\,dx = \frac{1}{4}x^4\cot^{-1}(ax)^3 + \frac{1}{4}(3a)\int \frac{x^4\cot^{-1}(ax)^2}{1+a^2x^2}\,dx$$
$$= \frac{1}{4}x^4\cot^{-1}(ax)^3 + \frac{3\int x^2\cot^{-1}(ax)^2\,dx}{4a} - \frac{3\int \frac{x^2\cot^{-1}(ax)^2}{1+a^2x^2}\,dx}{4a}$$
$$= \frac{x^3\cot^{-1}(ax)^2}{4a} + \frac{1}{4}x^4\cot^{-1}(ax)^3 + \frac{1}{2}\int \frac{x^3\cot^{-1}(ax)}{1+a^2x^2}\,dx - \frac{3\int \cot^{-1}(ax)^2\,dx}{4a^3} + \frac{3\int \frac{\cot^{-1}(a}{1+a^2x}}{4a^3}$$
$$= -\frac{3x\cot^{-1}(ax)^2}{4a^3} + \frac{x^3\cot^{-1}(ax)^2}{4a} - \frac{\cot^{-1}(ax)^3}{4a^4} + \frac{1}{4}x^4\cot^{-1}(ax)^3 + \frac{\int x\cot^{-1}(ax)\,dx}{2a^2} - \int$$
$$= \frac{x^2\cot^{-1}(ax)}{4a^2} - \frac{i\cot^{-1}(ax)^2}{a^4} - \frac{3x\cot^{-1}(ax)^2}{4a^3} + \frac{x^3\cot^{-1}(ax)^2}{4a} - \frac{\cot^{-1}(ax)^3}{4a^4} + \frac{1}{4}x^4\cot^{-1}($$
$$= \frac{x}{4a^3} + \frac{x^2\cot^{-1}(ax)}{4a^2} - \frac{i\cot^{-1}(ax)^2}{a^4} - \frac{3x\cot^{-1}(ax)^2}{4a^3} + \frac{x^3\cot^{-1}(ax)^2}{4a} - \frac{\cot^{-1}(ax)^3}{4a^4} + \frac{1}{4}x^4$$
$$= \frac{x}{4a^3} + \frac{x^2\cot^{-1}(ax)}{4a^2} - \frac{i\cot^{-1}(ax)^2}{a^4} - \frac{3x\cot^{-1}(ax)^2}{4a^3} + \frac{x^3\cot^{-1}(ax)^2}{4a} - \frac{\cot^{-1}(ax)^3}{4a^4} + \frac{1}{4}x^4$$
$$= \frac{x}{4a^3} + \frac{x^2\cot^{-1}(ax)}{4a^2} - \frac{i\cot^{-1}(ax)^2}{a^4} - \frac{3x\cot^{-1}(ax)^2}{4a^3} + \frac{x^3\cot^{-1}(ax)^2}{4a} - \frac{\cot^{-1}(ax)^3}{4a^4} + \frac{1}{4}x^4$$

Mathematica [A] time = 0.38, size = 96, normalized size = 0.65

$$\frac{\left(a^4x^4-1\right)\cot^{-1}(ax)^3 + \left(a^3x^3-3ax-4i\right)\cot^{-1}(ax)^2 + \cot^{-1}(ax)\left(a^2x^2+8\log\left(1-e^{2i\cot^{-1}(ax)}\right)+1\right) - 4i\text{Li}_2\left(e^{\cdot}\right.}{4a^4}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[x^3*ArcCot[a*x]^3,x]
```

```
[Out] (a*x + (-4*I - 3*a*x + a^3*x^3)*ArcCot[a*x]^2 + (-1 + a^4*x^4)*ArcCot[a*x]^
3 + ArcCot[a*x]*(1 + a^2*x^2 + 8*Log[1 - E^((2*I)*ArcCot[a*x])]) - (4*I)*Po
lyLog[2, E^((2*I)*ArcCot[a*x])])/(4*a^4)
```

fricas [F] time = 0.55, size = 0, normalized size = 0.00

$$\text{integral}\left(x^3\,\text{arccot}\,(ax)^3\,, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*arccot(a*x)^3,x, algorithm="fricas")
```

```
[Out] integral(x^3*arccot(a*x)^3, x)
```

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

$$\int x^3\,\text{arccot}\,(ax)^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*arccot(a*x)^3,x, algorithm="giac")
```

```
[Out] integrate(x^3*arccot(a*x)^3, x)
```

maple [A] time = 1.55, size = 209, normalized size = 1.41

$$\frac{x^4\text{arccot}\,(ax)^3}{4} - \frac{\text{arccot}\,(ax)^3}{4a^4} + \frac{x^3\text{arccot}\,(ax)^2}{4a} - \frac{3x\text{arccot}\,(ax)^2}{4a^3} + \frac{x^2\text{arccot}\,(ax)}{4a^2} - \frac{i\text{arccot}\,(ax)^2}{a^4} + \frac{\text{arccot}\,(ax)}{4a^4} + \frac{x}{4a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*arccot(a*x)^3,x)
```

```
[Out] 1/4*x^4*arccot(a*x)^3-1/4*arccot(a*x)^3/a^4+1/4*x^3*arccot(a*x)^2/a-3/4*x*a
rccot(a*x)^2/a^3+1/4*x^2*arccot(a*x)/a^2-I*arccot(a*x)^2/a^4+1/4/a^4*arccot
(a*x)+1/4*x/a^3-1/4*I/a^4+2/a^4*arccot(a*x)*ln(1+(I+a*x)/(a^2*x^2+1)^(1/2))
-2*I/a^4*polylog(2,-(I+a*x)/(a^2*x^2+1)^(1/2))+2/a^4*arccot(a*x)*ln(1-(I+a*
x)/(a^2*x^2+1)^(1/2))-2*I/a^4*polylog(2,(I+a*x)/(a^2*x^2+1)^(1/2))
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*arccot(a*x)^3,x, algorithm="maxima")
```

```
[Out] Timed out
```

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

$$\int x^3 \operatorname{acot}(a\,x)^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*acot(a*x)^3,x)
```

```
[Out] int(x^3*acot(a*x)^3, x)
```

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

$$\int x^3 \operatorname{acot}^3(ax)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*acot(a*x)**3,x)
```

```
[Out] Integral(x**3*acot(a*x)**3, x)
```

3.26 $\int x^2 \cot^{-1}(ax)^3 \, dx$

Optimal. Leaf size=157

$$\frac{\text{Li}_3\left(1-\frac{2}{iax+1}\right)}{2a^3}-\frac{i\text{Li}_2\left(1-\frac{2}{iax+1}\right)\cot^{-1}(ax)}{a^3}-\frac{i\cot^{-1}(ax)^3}{3a^3}+\frac{\cot^{-1}(ax)^2}{2a^3}+\frac{\log\left(\frac{2}{1+iax}\right)\cot^{-1}(ax)^2}{a^3}+\frac{x\cot^{-1}(ax)}{a^2}+\frac{\log}{}$$

```
[Out] x*arccot(a*x)/a^2+1/2*arccot(a*x)^2/a^3+1/2*x^2*arccot(a*x)^2/a-1/3*I*arcco
t(a*x)^3/a^3+1/3*x^3*arccot(a*x)^3+arccot(a*x)^2*ln(2/(1+I*a*x))/a^3+1/2*ln
(a^2*x^2+1)/a^3-I*arccot(a*x)*polylog(2,1-2/(1+I*a*x))/a^3+1/2*polylog(3,1-
2/(1+I*a*x))/a^3
```

Rubi [A] time = 0.30, antiderivative size = 157, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 9, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.900, Rules used = {4853, 4917, 4847, 260, 4885, 4921, 4855, 4995, 6610}

$$\frac{\text{PolyLog}\left(3,1-\frac{2}{1+iax}\right)}{2a^3}-\frac{i\cot^{-1}(ax)\text{PolyLog}\left(2,1-\frac{2}{1+iax}\right)}{a^3}+\frac{\log\left(a^2x^2+1\right)}{2a^3}-\frac{i\cot^{-1}(ax)^3}{3a^3}+\frac{\cot^{-1}(ax)^2}{2a^3}+\frac{x\cot^{-1}}{a^2}$$

Antiderivative was successfully verified.

```
[In] Int[x^2*ArcCot[a*x]^3,x]
```

```
[Out] (x*ArcCot[a*x])/a^2 + ArcCot[a*x]^2/(2*a^3) + (x^2*ArcCot[a*x]^2)/(2*a) - (
(I/3)*ArcCot[a*x]^3)/a^3 + (x^3*ArcCot[a*x]^3)/3 + (ArcCot[a*x]^2*Log[2/(1
+ I*a*x)])/a^3 + Log[1 + a^2*x^2]/(2*a^3) - (I*ArcCot[a*x]*PolyLog[2, 1 - 2
/(1 + I*a*x)])/a^3 + PolyLog[3, 1 - 2/(1 + I*a*x)]/(2*a^3)
```

Rule 260

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

Rule 4847

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b*Ar
cCot[c*x])^p, x] + Dist[b*c*p, Int[(x*(a + b*ArcCot[c*x])^(p - 1))/(1 + c^2
*x^2), x], x] /; FreeQ[{a, b, c}, x] && IGtQ[p, 0]
```

Rule 4853

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcCot[c*x])^p)/(d*(m + 1)), x] + Dist[(b*c*p
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcCot[c*x])^(p - 1))/(1 + c^2*x^2
), x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[p, 0] && (EqQ[p, 1] || Integ
erQ[m]) && NeQ[m, -1]
```

Rule 4855

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symbol]
 :> -Simp[((a + b*ArcCot[c*x])^p*Log[2/(1 + (e*x)/d)])/e, x] - Dist[(b*c*p)
/e, Int[((a + b*ArcCot[c*x])^(p - 1)*Log[2/(1 + (e*x)/d)])/(1 + c^2*x^2), x
], x] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[p, 0] && EqQ[c^2*d^2 + e^2, 0]
```

Rule 4885

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)^2), x_Symbo
l] :> -Simp[(a + b*ArcCot[c*x])^(p + 1)/(b*c*d*(p + 1)), x] /; FreeQ[{a, b,
 c, d, e, p}, x] && EqQ[e, c^2*d] && NeQ[p, -1]
```

Rule 4917

```
Int[(((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)*((f_.)*(x_))^(m_))/((d_) + (e
_.)*(x_)^2), x_Symbol] :> Dist[f^2/e, Int[(f*x)^(m - 2)*(a + b*ArcCot[c*x])
^p, x], x] - Dist[(d*f^2)/e, Int[((f*x)^(m - 2)*(a + b*ArcCot[c*x])^p)/(d +
 e*x^2), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && GtQ[p, 0] && GtQ[m, 1]
```

Rule 4921

```
Int[(((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)*(x_))/((d_) + (e_.)*(x_)^2),
x_Symbol] :> Simp[(I*(a + b*ArcCot[c*x])^(p + 1))/(b*e*(p + 1)), x] - Dist[
1/(c*d), Int[(a + b*ArcCot[c*x])^p/(I - c*x), x], x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[e, c^2*d] && IGtQ[p, 0]
```

Rule 4995

```
Int[(Log[u_]*((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.))/((d_) + (e_.)*(x_)^2
), x_Symbol] :> -Simp[(I*(a + b*ArcCot[c*x])^p*PolyLog[2, 1 - u])/(2*c*d),
x] - Dist[(b*p*I)/2, Int[((a + b*ArcCot[c*x])^(p - 1)*PolyLog[2, 1 - u])/(d
 + e*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[p, 0] && EqQ[e, c^2*
d] && EqQ[(1 - u)^2 - (1 - (2*I)/(I - c*x))^2, 0]
```

Rule 6610

```
Int[(u_)*PolyLog[n_, v_], x_Symbol] :> With[{w = DerivativeDivides[v, u*v,
x]}, Simp[w*PolyLog[n + 1, v], x] /;  !FalseQ[w]] /; FreeQ[n, x]
```

Rubi steps

$$\int x^2 \cot^{-1}(ax)^3\,dx = \frac{1}{3}x^3\cot^{-1}(ax)^3 + a\int \frac{x^3\cot^{-1}(ax)^2}{1+a^2x^2}\,dx$$

$$= \frac{1}{3}x^3\cot^{-1}(ax)^3 + \frac{\int x\cot^{-1}(ax)^2\,dx}{a} - \frac{\int \frac{x\cot^{-1}(ax)^2}{1+a^2x^2}\,dx}{a}$$

$$= \frac{x^2\cot^{-1}(ax)^2}{2a} - \frac{i\cot^{-1}(ax)^3}{3a^3} + \frac{1}{3}x^3\cot^{-1}(ax)^3 + \frac{\int \frac{\cot^{-1}(ax)^2}{i-ax}\,dx}{a^2} + \int \frac{x^2\cot^{-1}(ax)}{1+a^2x^2}\,dx$$

$$= \frac{x^2\cot^{-1}(ax)^2}{2a} - \frac{i\cot^{-1}(ax)^3}{3a^3} + \frac{1}{3}x^3\cot^{-1}(ax)^3 + \frac{\cot^{-1}(ax)^2\log\left(\frac{2}{1+iax}\right)}{a^3} + \frac{\int \cot^{-1}(ax)\,dx}{a^2} -$$

$$= \frac{x\cot^{-1}(ax)}{a^2} + \frac{\cot^{-1}(ax)^2}{2a^3} + \frac{x^2\cot^{-1}(ax)^2}{2a} - \frac{i\cot^{-1}(ax)^3}{3a^3} + \frac{1}{3}x^3\cot^{-1}(ax)^3 + \frac{\cot^{-1}(ax)^2\log}{a^3}$$

$$= \frac{x\cot^{-1}(ax)}{a^2} + \frac{\cot^{-1}(ax)^2}{2a^3} + \frac{x^2\cot^{-1}(ax)^2}{2a} - \frac{i\cot^{-1}(ax)^3}{3a^3} + \frac{1}{3}x^3\cot^{-1}(ax)^3 + \frac{\cot^{-1}(ax)^2\log}{a^3}$$

Mathematica [A] time = 0.35, size = 149, normalized size = 0.95

$$\frac{8a^3x^3\cot^{-1}(ax)^3 - 24\log\left(\frac{1}{ax\sqrt{\frac{1}{a^2x^2}+1}}\right) + 12a^2x^2\cot^{-1}(ax)^2 + 24i\cot^{-1}(ax)\mathrm{Li}_2\left(e^{-2i\cot^{-1}(ax)}\right) + 12\mathrm{Li}_3\left(e^{-2i\cot^{-1}(ax)}\right)}{24a^3}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[x^2*ArcCot[a*x]^3,x]
```

```
[Out] ((-I)*Pi^3 + 24*a*x*ArcCot[a*x] + 12*ArcCot[a*x]^2 + 12*a^2*x^2*ArcCot[a*x]
^2 + (8*I)*ArcCot[a*x]^3 + 8*a^3*x^3*ArcCot[a*x]^3 + 24*ArcCot[a*x]^2*Log[1
 - E^((-2*I)*ArcCot[a*x])] - 24*Log[1/(a*Sqrt[1 + 1/(a^2*x^2)]*x)] + (24*I)
*ArcCot[a*x]*PolyLog[2, E^((-2*I)*ArcCot[a*x])] + 12*PolyLog[3, E^((-2*I)*A
rcCot[a*x])])/(24*a^3)
```

fricas [F] time = 0.60, size = 0, normalized size = 0.00

$$\text{integral}\left(x^2 \operatorname{arccot}(ax)^3, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*arccot(a*x)^3,x, algorithm="fricas")
```

```
[Out] integral(x^2*arccot(a*x)^3, x)
```

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

$$\int x^2 \operatorname{arccot}(ax)^3 \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*arccot(a*x)^3,x, algorithm="giac")
```

```
[Out] integrate(x^2*arccot(a*x)^3, x)
```

maple [C] time = 4.19, size = 1815, normalized size = 11.56

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*arccot(a*x)^3,x)
```

```
[Out] x*arccot(a*x)/a^2+1/3*x^3*arccot(a*x)^3+1/2*x^2*arccot(a*x)^2/a-1/3*I*arcco
t(a*x)^3/a^3-1/2/a^3*arccot(a*x)^2*ln(a^2*x^2+1)+1/a^3*arccot(a*x)^2*ln((I+
a*x)/(a^2*x^2+1)^(1/2))-1/a^3*arccot(a*x)^2*ln((I+a*x)^2/(a^2*x^2+1)-1)+1/a
^3*arccot(a*x)^2*ln(1+(I+a*x)/(a^2*x^2+1)^(1/2))+1/a^3*arccot(a*x)^2*ln(1-(
I+a*x)/(a^2*x^2+1)^(1/2))+I/a^3*arccot(a*x)+1/a^3*ln(2)*arccot(a*x)^2-1/a^3
*ln((I+a*x)/(a^2*x^2+1)^(1/2)-1)-1/a^3*ln(1+(I+a*x)/(a^2*x^2+1)^(1/2))+2/a^
3*polylog(3,-(I+a*x)/(a^2*x^2+1)^(1/2))+2/a^3*polylog(3,(I+a*x)/(a^2*x^2+1)
^(1/2))-1/8/a^2*arccot(a*x)^2*csgn(-I*(I+a*x)^4/(a^2*x^2+1)^2+2*I*(I+a*x)^2
/(a^2*x^2+1)-I)^3*Pi*x+1/2*I/a^3*arccot(a*x)^2*Pi-2*I/a^3*arccot(a*x)*polyl
og(2,-(I+a*x)/(a^2*x^2+1)^(1/2))-2*I/a^3*arccot(a*x)*polylog(2,(I+a*x)/(a^2
*x^2+1)^(1/2))-1/8/a^2*arccot(a*x)^2*csgn(I*((I+a*x)^2/(a^2*x^2+1)-1)^2)^3*
Pi*x-1/8*I/a^3*arccot(a*x)^2*csgn(-I*(I+a*x)^4/(a^2*x^2+1)^2+2*I*(I+a*x)^2/
(a^2*x^2+1)-I)^3*Pi-1/4*I/a^3*arccot(a*x)^2*csgn(I*(I+a*x)^2/(a^2*x^2+1))^3
*Pi+1/4*I/a^3*arccot(a*x)^2*csgn(I*(I+a*x)^2/(a^2*x^2+1)/((I+a*x)^2/(a^2*x^
2+1)-1)^2)^3*Pi+1/8*I/a^3*arccot(a*x)^2*csgn(I*((I+a*x)^2/(a^2*x^2+1)-1)^2)
^3*Pi-1/2*I/a^3*arccot(a*x)^2*csgn(I*(I+a*x)^2/(a^2*x^2+1)/((I+a*x)^2/(a^2*
x^2+1)-1)^2)^2*Pi-1/4/a^2*arccot(a*x)^2*csgn(-I*(I+a*x)^4/(a^2*x^2+1)^2+2*I
*(I+a*x)^2/(a^2*x^2+1)-I)^2*csgn(I*(I+a*x)^2/(a^2*x^2+1)-I)*Pi*x-1/8/a^2*ar
ccot(a*x)^2*csgn(-I*(I+a*x)^4/(a^2*x^2+1)^2+2*I*(I+a*x)^2/(a^2*x^2+1)-I)*cs
gn(I*(I+a*x)^2/(a^2*x^2+1)-I)^2*Pi*x+1/4/a^2*arccot(a*x)^2*csgn(I*((I+a*x)^
2/(a^2*x^2+1)-1)^2)^2*csgn(I*((I+a*x)^2/(a^2*x^2+1)-1))*Pi*x-1/8/a^2*arccot
(a*x)^2*csgn(I*((I+a*x)^2/(a^2*x^2+1)-1)^2)*csgn(I*((I+a*x)^2/(a^2*x^2+1)-1
))^2*Pi*x-1/4*I/a^3*arccot(a*x)^2*csgn(-I*(I+a*x)^4/(a^2*x^2+1)^2+2*I*(I+a*
x)^2/(a^2*x^2+1)-I)^2*csgn(I*(I+a*x)^2/(a^2*x^2+1)-I)*Pi-1/8*I/a^3*arccot(a
*x)^2*csgn(-I*(I+a*x)^4/(a^2*x^2+1)^2+2*I*(I+a*x)^2/(a^2*x^2+1)-I)*csgn(I*(
I+a*x)^2/(a^2*x^2+1)-I)^2*Pi-1/4*I/a^3*arccot(a*x)^2*csgn(I*(I+a*x)/(a^2*x^
2+1)^(1/2))^2*csgn(I*(I+a*x)^2/(a^2*x^2+1))*Pi+1/2*I/a^3*arccot(a*x)^2*csgn
```

```
(I*(I+a*x)/(a^2*x^2+1)^(1/2))*csgn(I*(I+a*x)^2/(a^2*x^2+1))^2*Pi+1/4*I/a^3*
arccot(a*x)^2*csgn(I*(I+a*x)^2/(a^2*x^2+1))*csgn(I*(I+a*x)^2/(a^2*x^2+1)/((
I+a*x)^2/(a^2*x^2+1)-1)^2)^2*Pi+1/4*I/a^3*arccot(a*x)^2*csgn(I*(I+a*x)^2/(a
^2*x^2+1)/((I+a*x)^2/(a^2*x^2+1)-1)^2)^2*csgn(I/((I+a*x)^2/(a^2*x^2+1)-1)^2
)*Pi-1/4*I/a^3*arccot(a*x)^2*csgn(I*((I+a*x)^2/(a^2*x^2+1)-1)^2)^2*csgn(I*(
(I+a*x)^2/(a^2*x^2+1)-1))*Pi+1/8*I/a^3*arccot(a*x)^2*csgn(I*((I+a*x)^2/(a^2
*x^2+1)-1)^2)*csgn(I*((I+a*x)^2/(a^2*x^2+1)-1))^2*Pi+1/2*arccot(a*x)^2/a^3-
1/4*I/a^3*arccot(a*x)^2*csgn(I*(I+a*x)^2/(a^2*x^2+1))*csgn(I*(I+a*x)^2/(a^2
*x^2+1)/((I+a*x)^2/(a^2*x^2+1)-1)^2)*csgn(I/((I+a*x)^2/(a^2*x^2+1)-1)^2)*Pi
```

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

$$\frac{1}{24}x^3\arctan(1,ax)^3-\frac{1}{32}x^3\arctan(1,ax)\log\left(a^2x^2+1\right)^2+\int\frac{28\,a^2x^4\arctan(1,ax)^3+4\,a^2x^4\arctan(1,ax)\log\left(\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*arccot(a*x)^3,x, algorithm="maxima")
```

```
[Out] 1/24*x^3*arctan2(1, a*x)^3 - 1/32*x^3*arctan2(1, a*x)*log(a^2*x^2 + 1)^2 +
integrate(1/32*(28*a^2*x^4*arctan2(1, a*x)^3 + 4*a^2*x^4*arctan2(1, a*x)*lo
g(a^2*x^2 + 1) + 4*a*x^3*arctan2(1, a*x)^2 + 28*x^2*arctan2(1, a*x)^3 + (3*
a^2*x^4*arctan2(1, a*x) - a*x^3 + 3*x^2*arctan2(1, a*x))*log(a^2*x^2 + 1)^2
)/(a^2*x^2 + 1), x)
```

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

$$\int x^2\,\mathrm{acot}\left(a\,x\right)^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*acot(a*x)^3,x)
```

```
[Out] int(x^2*acot(a*x)^3, x)
```

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

$$\int x^{2}\operatorname{acot}^{3}\left(ax\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*acot(a*x)**3,x)
```

```
[Out] Integral(x**2*acot(a*x)**3, x)
```

3.27 $\int x \cot^{-1}(ax)^3 \, dx$

Optimal. Leaf size=103

$$\frac{3i\text{Li}_2\left(1-\frac{2}{iax+1}\right)}{2a^2}+\frac{\cot^{-1}(ax)^3}{2a^2}+\frac{3i\cot^{-1}(ax)^2}{2a^2}-\frac{3\log\left(\frac{2}{1+iax}\right)\cot^{-1}(ax)}{a^2}+\frac{1}{2}x^2\cot^{-1}(ax)^3+\frac{3x\cot^{-1}(ax)^2}{2a}$$

```
[Out] 3/2*I*arccot(a*x)^2/a^2+3/2*x*arccot(a*x)^2/a+1/2*arccot(a*x)^3/a^2+1/2*x^2
*arccot(a*x)^3-3*arccot(a*x)*ln(2/(1+I*a*x))/a^2+3/2*I*polylog(2,1-2/(1+I*a
*x))/a^2
```

Rubi [A] time = 0.17, antiderivative size = 103, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 8, integrand size = 8, $\frac{\text{number of rules}}{\text{integrand size}}$ = 1.000, Rules used = {4853, 4917, 4847, 4921, 4855, 2402, 2315, 4885}

$$\frac{3i\text{PolyLog}\left(2,1-\frac{2}{1+iax}\right)}{2a^2}+\frac{\cot^{-1}(ax)^3}{2a^2}+\frac{3i\cot^{-1}(ax)^2}{2a^2}-\frac{3\log\left(\frac{2}{1+iax}\right)\cot^{-1}(ax)}{a^2}+\frac{1}{2}x^2\cot^{-1}(ax)^3+\frac{3x\cot^{-1}(ax)^2}{2a}$$

Antiderivative was successfully verified.

```
[In] Int[x*ArcCot[a*x]^3,x]
```

```
[Out] (((3*I)/2)*ArcCot[a*x]^2)/a^2 + (3*x*ArcCot[a*x]^2)/(2*a) + ArcCot[a*x]^3/(
2*a^2) + (x^2*ArcCot[a*x]^3)/2 - (3*ArcCot[a*x]*Log[2/(1 + I*a*x)])/a^2 + (
((3*I)/2)*PolyLog[2, 1 - 2/(1 + I*a*x)])/a^2
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2402

```
Int[Log[(c_.)/((d_) + (e_.)*(x_))]/((f_) + (g_.)*(x_)^2), x_Symbol] :> -Dis
t[e/g, Subst[Int[Log[2*d*x]/(1 - 2*d*x), x], x, 1/(d + e*x)], x] /; FreeQ[{
c, d, e, f, g}, x] && EqQ[c, 2*d] && EqQ[e^2*f + d^2*g, 0]
```

Rule 4847

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b*Ar
cCot[c*x])^p, x] + Dist[b*c*p, Int[(x*(a + b*ArcCot[c*x])^(p - 1))/(1 + c^2
*x^2), x], x] /; FreeQ[{a, b, c}, x] && IGtQ[p, 0]
```

Rule 4853

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcCot[c*x])^p)/(d*(m + 1)), x] + Dist[(b*c*p
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcCot[c*x])^(p - 1))/(1 + c^2*x^2
), x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[p, 0] && (EqQ[p, 1] || Integ
erQ[m]) && NeQ[m, -1]
```

Rule 4855

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symbol]
 :> -Simp[((a + b*ArcCot[c*x])^p*Log[2/(1 + (e*x)/d)])/e, x] - Dist[(b*c*p)
/e, Int[((a + b*ArcCot[c*x])^(p - 1)*Log[2/(1 + (e*x)/d)])/(1 + c^2*x^2), x
], x] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[p, 0] && EqQ[c^2*d^2 + e^2, 0]
```

Rule 4885

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)^2), x_Symbo
l] :> -Simp[(a + b*ArcCot[c*x])^(p + 1)/(b*c*d*(p + 1)), x] /; FreeQ[{a, b,
 c, d, e, p}, x] && EqQ[e, c^2*d] && NeQ[p, -1]
```

Rule 4917

```
Int[(((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)*((f_.)*(x_))^(m_))/((d_) + (e
_.)*(x_)^2), x_Symbol] :> Dist[f^2/e, Int[(f*x)^(m - 2)*(a + b*ArcCot[c*x])
^p, x], x] - Dist[(d*f^2)/e, Int[((f*x)^(m - 2)*(a + b*ArcCot[c*x])^p)/(d +
 e*x^2), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && GtQ[p, 0] && GtQ[m, 1]
```

Rule 4921

```
Int[(((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)*(x_))/((d_) + (e_.)*(x_)^2),
x_Symbol] :> Simp[(I*(a + b*ArcCot[c*x])^(p + 1))/(b*e*(p + 1)), x] - Dist[
1/(c*d), Int[(a + b*ArcCot[c*x])^p/(I - c*x), x], x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[e, c^2*d] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}
\int x\cot^{-1}(ax)^3\,dx &= \frac{1}{2}x^2\cot^{-1}(ax)^3+\frac{1}{2}(3a)\int\frac{x^2\cot^{-1}(ax)^2}{1+a^2x^2}\,dx\\
&= \frac{1}{2}x^2\cot^{-1}(ax)^3+\frac{3\int\cot^{-1}(ax)^2\,dx}{2a}-\frac{3\int\frac{\cot^{-1}(ax)^2}{1+a^2x^2}\,dx}{2a}\\
&= \frac{3x\cot^{-1}(ax)^2}{2a}+\frac{\cot^{-1}(ax)^3}{2a^2}+\frac{1}{2}x^2\cot^{-1}(ax)^3+3\int\frac{x\cot^{-1}(ax)}{1+a^2x^2}\,dx\\
&= \frac{3i\cot^{-1}(ax)^2}{2a^2}+\frac{3x\cot^{-1}(ax)^2}{2a}+\frac{\cot^{-1}(ax)^3}{2a^2}+\frac{1}{2}x^2\cot^{-1}(ax)^3-\frac{3\int\frac{\cot^{-1}(ax)}{i-ax}\,dx}{a}\\
&= \frac{3i\cot^{-1}(ax)^2}{2a^2}+\frac{3x\cot^{-1}(ax)^2}{2a}+\frac{\cot^{-1}(ax)^3}{2a^2}+\frac{1}{2}x^2\cot^{-1}(ax)^3-\frac{3\cot^{-1}(ax)\log\left(\frac{2}{1+iax}\right)}{a^2}-\frac{3
\end{aligned}$$

$$\begin{aligned}
&= \frac{3i\cot^{-1}(ax)^2}{2a^2}+\frac{3x\cot^{-1}(ax)^2}{2a}+\frac{\cot^{-1}(ax)^3}{2a^2}+\frac{1}{2}x^2\cot^{-1}(ax)^3-\frac{3\cot^{-1}(ax)\log\left(\frac{2}{1+iax}\right)}{a^2}+\frac{(3
\end{aligned}$$

$$\begin{aligned}
&= \frac{3i\cot^{-1}(ax)^2}{2a^2}+\frac{3x\cot^{-1}(ax)^2}{2a}+\frac{\cot^{-1}(ax)^3}{2a^2}+\frac{1}{2}x^2\cot^{-1}(ax)^3-\frac{3\cot^{-1}(ax)\log\left(\frac{2}{1+iax}\right)}{a^2}+\frac{3i
\end{aligned}$$

Mathematica [A] time = 0.10, size = 76, normalized size = 0.74

$$\frac{\cot^{-1}(ax)\left(\left(a^2x^2+1\right)\cot^{-1}(ax)^2+3(ax+i)\cot^{-1}(ax)-6\log\left(1-e^{2i\cot^{-1}(ax)}\right)\right)+3i\text{Li}_2\left(e^{2i\cot^{-1}(ax)}\right)}{2a^2}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[x*ArcCot[a*x]^3,x]
```

```
[Out] (ArcCot[a*x]*(3*(I + a*x)*ArcCot[a*x] + (1 + a^2*x^2)*ArcCot[a*x]^2 - 6*Log
[1 - E^((2*I)*ArcCot[a*x])]) + (3*I)*PolyLog[2, E^((2*I)*ArcCot[a*x])])/(2*
a^2)
```

fricas [F] time = 0.70, size = 0, normalized size = 0.00

$$\text{integral}\left(x\,\text{arccot}\,(ax)^3\,,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*arccot(a*x)^3,x, algorithm="fricas")
[Out] integral(x*arccot(a*x)^3, x)
```

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

$$\int x \operatorname{arccot}(ax)^3 \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*arccot(a*x)^3,x, algorithm="giac")
[Out] integrate(x*arccot(a*x)^3, x)
```

maple [A] time = 0.73, size = 162, normalized size = 1.57

$$\frac{x^2 \operatorname{arccot}(ax)^3}{2} + \frac{\operatorname{arccot}(ax)^3}{2a^2} + \frac{3x \operatorname{arccot}(ax)^2}{2a} + \frac{3i \operatorname{arccot}(ax)^2}{2a^2} - \frac{3 \operatorname{arccot}(ax) \ln\left(1 - \frac{ax+i}{\sqrt{a^2x^2+1}}\right)}{a^2} - \frac{3 \operatorname{arccot}(ax) \ln}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*arccot(a*x)^3,x)
[Out] 1/2*x^2*arccot(a*x)^3+1/2*arccot(a*x)^3/a^2+3/2*x*arccot(a*x)^2/a+3/2*I*arc
cot(a*x)^2/a^2-3/a^2*arccot(a*x)*ln(1-(I+a*x)/(a^2*x^2+1)^(1/2))-3/a^2*arcc
ot(a*x)*ln(1+(I+a*x)/(a^2*x^2+1)^(1/2))+3*I/a^2*polylog(2,-(I+a*x)/(a^2*x^2
+1)^(1/2))+3*I/a^2*polylog(2,(I+a*x)/(a^2*x^2+1)^(1/2))
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*arccot(a*x)^3,x, algorithm="maxima")
[Out] Timed out
```

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

$$\int x \operatorname{acot}(a\,x)^3 \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*acot(a*x)^3,x)
[Out] int(x*acot(a*x)^3, x)
```

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

$$\int x \operatorname{acot}^3(ax) \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*acot(a*x)**3,x)
[Out] Integral(x*acot(a*x)**3, x)
```

3.28 $\int \cot^{-1}(ax)^3\,dx$

Optimal. Leaf size=96

$$-\frac{3\text{Li}_3\left(1-\frac{2}{iax+1}\right)}{2a}+\frac{3i\text{Li}_2\left(1-\frac{2}{iax+1}\right)\cot^{-1}(ax)}{a}+x\cot^{-1}(ax)^3+\frac{i\cot^{-1}(ax)^3}{a}-\frac{3\log\left(\frac{2}{1+iax}\right)\cot^{-1}(ax)^2}{a}$$

```
[Out] I*arccot(a*x)^3/a+x*arccot(a*x)^3-3*arccot(a*x)^2*ln(2/(1+I*a*x))/a+3*I*arc
cot(a*x)*polylog(2,1-2/(1+I*a*x))/a-3/2*polylog(3,1-2/(1+I*a*x))/a
```

Rubi [A] time = 0.15, antiderivative size = 96, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 6, integrand size = 6, $\frac{\text{number of rules}}{\text{integrand size}}$ = 1.000, Rules used = {4847, 4921, 4855, 4885, 4995, 6610}

$$-\frac{3\text{PolyLog}\left(3,1-\frac{2}{1+iax}\right)}{2a}+\frac{3i\cot^{-1}(ax)\text{PolyLog}\left(2,1-\frac{2}{1+iax}\right)}{a}+x\cot^{-1}(ax)^3+\frac{i\cot^{-1}(ax)^3}{a}-\frac{3\log\left(\frac{2}{1+iax}\right)\cot^{-1}(ax^{\cdots}}{a}$$

Antiderivative was successfully verified.

```
[In] Int[ArcCot[a*x]^3,x]
```

```
[Out] (I*ArcCot[a*x]^3)/a + x*ArcCot[a*x]^3 - (3*ArcCot[a*x]^2*Log[2/(1 + I*a*x)]
)/a + ((3*I)*ArcCot[a*x]*PolyLog[2, 1 - 2/(1 + I*a*x)])/a - (3*PolyLog[3, 1
 - 2/(1 + I*a*x)])/(2*a)
```

Rule 4847

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b*Ar
cCot[c*x])^p, x] + Dist[b*c*p, Int[(x*(a + b*ArcCot[c*x])^(p - 1))/(1 + c^2
*x^2), x], x] /; FreeQ[{a, b, c}, x] && IGtQ[p, 0]
```

Rule 4855

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symbol]
 :> -Simp[((a + b*ArcCot[c*x])^p*Log[2/(1 + (e*x)/d)])/e, x] - Dist[(b*c*p)
/e, Int[((a + b*ArcCot[c*x])^(p - 1)*Log[2/(1 + (e*x)/d)])/(1 + c^2*x^2), x
], x] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[p, 0] && EqQ[c^2*d^2 + e^2, 0]
```

Rule 4885

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)^2), x_Symbo
l] :> -Simp[(a + b*ArcCot[c*x])^(p + 1)/(b*c*d*(p + 1)), x] /; FreeQ[{a, b,
 c, d, e, p}, x] && EqQ[e, c^2*d] && NeQ[p, -1]
```

Rule 4921

```
Int[(((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)*(x_))/((d_) + (e_.)*(x_)^2),
x_Symbol] :> Simp[(I*(a + b*ArcCot[c*x])^(p + 1))/(b*e*(p + 1)), x] - Dist[
1/(c*d), Int[(a + b*ArcCot[c*x])^p/(I - c*x), x], x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[e, c^2*d] && IGtQ[p, 0]
```

Rule 4995

```
Int[(Log[u_]*((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.))/((d_) + (e_.)*(x_)^2
), x_Symbol] :> -Simp[(I*(a + b*ArcCot[c*x])^p*PolyLog[2, 1 - u])/(2*c*d),
x] - Dist[(b*p*I)/2, Int[((a + b*ArcCot[c*x])^(p - 1)*PolyLog[2, 1 - u])/(d
 + e*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[p, 0] && EqQ[e, c^2*
d] && EqQ[(1 - u)^2 - (1 - (2*I)/(I - c*x))^2, 0]
```

Rule 6610

```
Int[(u_)*PolyLog[n_, v_], x_Symbol] :> With[{w = DerivativeDivides[v, u*v,
x]}, Simp[w*PolyLog[n + 1, v], x] /;  !FalseQ[w]] /; FreeQ[n, x]
```

Rubi steps

$$\int \cot^{-1}(ax)^3\,dx = x\cot^{-1}(ax)^3 + (3a)\int \frac{x\cot^{-1}(ax)^2}{1+a^2x^2}\,dx$$
$$= \frac{i\cot^{-1}(ax)^3}{a} + x\cot^{-1}(ax)^3 - 3\int \frac{\cot^{-1}(ax)^2}{i-ax}\,dx$$
$$= \frac{i\cot^{-1}(ax)^3}{a} + x\cot^{-1}(ax)^3 - \frac{3\cot^{-1}(ax)^2\log\left(\frac{2}{1+iax}\right)}{a} - 6\int \frac{\cot^{-1}(ax)\log\left(\frac{2}{1+iax}\right)}{1+a^2x^2}\,dx$$
$$= \frac{i\cot^{-1}(ax)^3}{a} + x\cot^{-1}(ax)^3 - \frac{3\cot^{-1}(ax)^2\log\left(\frac{2}{1+iax}\right)}{a} + \frac{3i\cot^{-1}(ax)\mathrm{Li}_2\left(1-\frac{2}{1+iax}\right)}{a} + 3i\int$$
$$= \frac{i\cot^{-1}(ax)^3}{a} + x\cot^{-1}(ax)^3 - \frac{3\cot^{-1}(ax)^2\log\left(\frac{2}{1+iax}\right)}{a} + \frac{3i\cot^{-1}(ax)\mathrm{Li}_2\left(1-\frac{2}{1+iax}\right)}{a} - \frac{3\mathrm{Li}_3}{}$$

Mathematica [A] time = 0.12, size = 90, normalized size = 0.94

$$-\frac{3i\cot^{-1}(ax)\mathrm{Li}_2\left(e^{-2i\cot^{-1}(ax)}\right)}{a} - \frac{3\mathrm{Li}_3\left(e^{-2i\cot^{-1}(ax)}\right)}{2a} + x\cot^{-1}(ax)^3 - \frac{i\cot^{-1}(ax)^3}{a} - \frac{3\cot^{-1}(ax)^2\log\left(1-e^{-2i\cot^{-1}(a}\right.}{a}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[ArcCot[a*x]^3,x]
```

```
[Out] ((-I)*ArcCot[a*x]^3)/a + x*ArcCot[a*x]^3 - (3*ArcCot[a*x]^2*Log[1 - E^((-2*
I)*ArcCot[a*x])])/a - ((3*I)*ArcCot[a*x]*PolyLog[2, E^((-2*I)*ArcCot[a*x])]
)/a - (3*PolyLog[3, E^((-2*I)*ArcCot[a*x])])/(2*a)
```

fricas [F] time = 0.54, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\mathrm{arccot}\,(ax)^3, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(a*x)^3,x, algorithm="fricas")
```

```
[Out] integral(arccot(a*x)^3, x)
```

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

$$\int \mathrm{arccot}\,(ax)^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(a*x)^3,x, algorithm="giac")
```

```
[Out] integrate(arccot(a*x)^3, x)
```

maple [B] time = 0.45, size = 199, normalized size = 2.07

$$x\,\mathrm{arccot}\,(ax)^3 + \frac{i\,\mathrm{arccot}\,(ax)^3}{a} - \frac{3\,\mathrm{arccot}\,(ax)^2\ln\left(1+\frac{ax+i}{\sqrt{a^2x^2+1}}\right)}{a} - \frac{3\,\mathrm{arccot}\,(ax)^2\ln\left(1-\frac{ax+i}{\sqrt{a^2x^2+1}}\right)}{a} + \frac{6i\,\mathrm{arccot}\,(ax)\,\mathrm{p}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arccot(a*x)^3,x)
```

```
[Out] x*arccot(a*x)^3+I*arccot(a*x)^3/a-3/a*arccot(a*x)^2*ln(1+(I+a*x)/(a^2*x^2+1
)^(1/2))-3/a*arccot(a*x)^2*ln(1-(I+a*x)/(a^2*x^2+1)^(1/2))+6*I/a*arccot(a*x
)*polylog(2,-(I+a*x)/(a^2*x^2+1)^(1/2))+6*I/a*arccot(a*x)*polylog(2,(I+a*x)
/(a^2*x^2+1)^(1/2))-6/a*polylog(3,(I+a*x)/(a^2*x^2+1)^(1/2))-6/a*polylog(3,
-(I+a*x)/(a^2*x^2+1)^(1/2))
```

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

$$\frac{1}{8}\,x\arctan\left(1,ax\right)^{3}-\frac{3}{32}\,x\arctan\left(1,ax\right)\log\left(a^{2}x^{2}+1\right)^{2}+\frac{21\,\arctan\left(ax\right)^{2}\arctan\left(\frac{1}{ax}\right)^{2}}{16\,a}+\frac{7\,\arctan\left(ax\right)\arctan\left(\frac{1}{ax}\right)^{3}}{8\,a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(a*x)^3,x, algorithm="maxima")
```

```
[Out] 1/8*x*arctan2(1, a*x)^3 - 3/32*x*arctan2(1, a*x)*log(a^2*x^2 + 1)^2 + 21/16
*arctan(a*x)^2*arctan(1/(a*x))^2/a + 7/8*arctan(a*x)*arctan(1/(a*x))^3/a +
28*a^2*integrate(1/32*x^2*arctan(1/(a*x))^3/(a^2*x^2 + 1), x) + 3*a^2*integ
rate(1/32*x^2*arctan(1/(a*x))*log(a^2*x^2 + 1)^2/(a^2*x^2 + 1), x) + 12*a^2
*integrate(1/32*x^2*arctan(1/(a*x))*log(a^2*x^2 + 1)/(a^2*x^2 + 1), x) + 12
*a*integrate(1/32*x*arctan(1/(a*x))^2/(a^2*x^2 + 1), x) - 3*a*integrate(1/3
2*x*log(a^2*x^2 + 1)^2/(a^2*x^2 + 1), x) + 7/32*(a*arctan(a*x)^4 + 4*a*arct
an(a*x)^3*arctan(1/(a*x)))/a^2 + 3*integrate(1/32*arctan(1/(a*x))*log(a^2*x
^2 + 1)^2/(a^2*x^2 + 1), x)
```

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

$$\int \mathrm{acot}\left(a\,x\right)^{3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(acot(a*x)^3,x)
```

```
[Out] int(acot(a*x)^3, x)
```

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

$$\int \operatorname{acot}^{3}\left(ax\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(acot(a*x)**3,x)
```

```
[Out] Integral(acot(a*x)**3, x)
```

3.29 $\int \frac{\cot^{-1}(ax)^3}{x}\,dx$

Optimal. Leaf size=178

$$\frac{3}{4}i\text{Li}_4\left(1-\frac{2i}{ax+i}\right)-\frac{3}{4}i\text{Li}_4\left(1-\frac{2ax}{ax+i}\right)-\frac{3}{2}i\text{Li}_2\left(1-\frac{2i}{ax+i}\right)\cot^{-1}(ax)^2+\frac{3}{2}i\text{Li}_2\left(1-\frac{2ax}{ax+i}\right)\cot^{-1}(ax)^2-\frac{3}{2}\text{Li}_3\left(1\right.$$

```
[Out] 2*arccot(a*x)^3*arccoth(1-2/(1+I*a*x))-3/2*I*arccot(a*x)^2*polylog(2,1-2*I/
(I+a*x))+3/2*I*arccot(a*x)^2*polylog(2,1-2*a*x/(I+a*x))-3/2*arccot(a*x)*pol
ylog(3,1-2*I/(I+a*x))+3/2*arccot(a*x)*polylog(3,1-2*a*x/(I+a*x))+3/4*I*poly
log(4,1-2*I/(I+a*x))-3/4*I*polylog(4,1-2*a*x/(I+a*x))
```

Rubi [A] time = 0.33, antiderivative size = 178, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.600, Rules used = {4851, 4989, 4885, 4993, 4997, 6610}

$$\frac{3}{4}i\text{PolyLog}\left(4,1-\frac{2i}{ax+i}\right)-\frac{3}{4}i\text{PolyLog}\left(4,1-\frac{2ax}{ax+i}\right)-\frac{3}{2}i\cot^{-1}(ax)^2\text{PolyLog}\left(2,1-\frac{2i}{ax+i}\right)+\frac{3}{2}i\cot^{-1}(ax)^2\text{P}$$

Antiderivative was successfully verified.

```
[In] Int[ArcCot[a*x]^3/x,x]
```

```
[Out] 2*ArcCot[a*x]^3*ArcCoth[1 - 2/(1 + I*a*x)] - ((3*I)/2)*ArcCot[a*x]^2*PolyLo
g[2, 1 - (2*I)/(I + a*x)] + ((3*I)/2)*ArcCot[a*x]^2*PolyLog[2, 1 - (2*a*x)/
(I + a*x)] - (3*ArcCot[a*x]*PolyLog[3, 1 - (2*I)/(I + a*x)])/2 + (3*ArcCot[
a*x]*PolyLog[3, 1 - (2*a*x)/(I + a*x)])/2 + ((3*I)/4)*PolyLog[4, 1 - (2*I)/
(I + a*x)] - ((3*I)/4)*PolyLog[4, 1 - (2*a*x)/(I + a*x)]
```

Rule 4851

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_)/(x_), x_Symbol] :> Simp[2*(a +
b*ArcCot[c*x])^p*ArcCoth[1 - 2/(1 + I*c*x)], x] + Dist[2*b*c*p, Int[((a + b
*ArcCot[c*x])^(p - 1)*ArcCoth[1 - 2/(1 + I*c*x)])/(1 + c^2*x^2), x], x] /;
FreeQ[{a, b, c}, x] && IGtQ[p, 1]
```

Rule 4885

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)^2), x_Symbo
l] :> -Simp[(a + b*ArcCot[c*x])^(p + 1)/(b*c*d*(p + 1)), x] /; FreeQ[{a, b,
 c, d, e, p}, x] && EqQ[e, c^2*d] && NeQ[p, -1]
```

Rule 4989

```
Int[(ArcCoth[u_]*((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.))/((d_) + (e_.)*(x
_)^2), x_Symbol] :> Dist[1/2, Int[(Log[SimplifyIntegrand[1 + 1/u, x]]*(a +
b*ArcCot[c*x])^p)/(d + e*x^2), x], x] - Dist[1/2, Int[(Log[SimplifyIntegran
d[1 - 1/u, x]]*(a + b*ArcCot[c*x])^p)/(d + e*x^2), x], x] /; FreeQ[{a, b, c
, d, e}, x] && IGtQ[p, 0] && EqQ[e, c^2*d] && EqQ[u^2 - (1 - (2*I)/(I - c*x
))^2, 0]
```

Rule 4993

```
Int[(Log[u_]*((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.))/((d_) + (e_.)*(x_)^2
), x_Symbol] :> Simp[(I*(a + b*ArcCot[c*x])^p*PolyLog[2, 1 - u])/(2*c*d), x
] + Dist[(b*p*I)/2, Int[((a + b*ArcCot[c*x])^(p - 1)*PolyLog[2, 1 - u])/(d
+ e*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[p, 0] && EqQ[e, c^2*d
] && EqQ[(1 - u)^2 - (1 - (2*I)/(I + c*x))^2, 0]
```

Rule 4997

```
Int[(((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)*PolyLog[k_, u_])/((d_) + (e_.
)*(x_)^2), x_Symbol] :> -Simp[(I*(a + b*ArcCot[c*x])^p*PolyLog[k + 1, u])/(
2*c*d), x] - Dist[(b*p*I)/2, Int[((a + b*ArcCot[c*x])^(p - 1)*PolyLog[k + 1
, u])/(d + e*x^2), x], x] /; FreeQ[{a, b, c, d, e, k}, x] && IGtQ[p, 0] &&
EqQ[e, c^2*d] && EqQ[u^2 - (1 - (2*I)/(I + c*x))^2, 0]
```

Rule 6610

```
Int[(u_)*PolyLog[n_, v_], x_Symbol] :> With[{w = DerivativeDivides[v, u*v,
x]}, Simp[w*PolyLog[n + 1, v], x] /;  !FalseQ[w]] /; FreeQ[n, x]
```

Rubi steps

$$\int \frac{\cot^{-1}(ax)^3}{x}\,dx = 2\cot^{-1}(ax)^3\coth^{-1}\left(1-\frac{2}{1+iax}\right)+(6a)\int \frac{\cot^{-1}(ax)^2\coth^{-1}\left(1-\frac{2}{1+iax}\right)}{1+a^2x^2}\,dx$$

$$= 2\cot^{-1}(ax)^3\coth^{-1}\left(1-\frac{2}{1+iax}\right)-(3a)\int \frac{\cot^{-1}(ax)^2\log\left(\frac{2i}{i+ax}\right)}{1+a^2x^2}\,dx+(3a)\int \frac{\cot^{-1}(ax)^2\log}{1+a^2x^2}$$

$$= 2\cot^{-1}(ax)^3\coth^{-1}\left(1-\frac{2}{1+iax}\right)-\frac{3}{2}i\cot^{-1}(ax)^2\text{Li}_2\left(1-\frac{2i}{i+ax}\right)+\frac{3}{2}i\cot^{-1}(ax)^2\text{Li}_2\left(1-\frac{2a}{i+}\right.$$

$$= 2\cot^{-1}(ax)^3\coth^{-1}\left(1-\frac{2}{1+iax}\right)-\frac{3}{2}i\cot^{-1}(ax)^2\text{Li}_2\left(1-\frac{2i}{i+ax}\right)+\frac{3}{2}i\cot^{-1}(ax)^2\text{Li}_2\left(1-\frac{2a}{i+}\right.$$

$$= 2\cot^{-1}(ax)^3\coth^{-1}\left(1-\frac{2}{1+iax}\right)-\frac{3}{2}i\cot^{-1}(ax)^2\text{Li}_2\left(1-\frac{2i}{i+ax}\right)+\frac{3}{2}i\cot^{-1}(ax)^2\text{Li}_2\left(1-\frac{2a}{i+}\right.$$

Mathematica [A] time = 0.08, size = 180, normalized size = 1.01

$$\frac{1}{64}i\left(-96\cot^{-1}(ax)^2\text{Li}_2\left(e^{-2i\cot^{-1}(ax)}\right)-96\cot^{-1}(ax)^2\text{Li}_2\left(-e^{2i\cot^{-1}(ax)}\right)+96i\cot^{-1}(ax)\text{Li}_3\left(e^{-2i\cot^{-1}(ax)}\right)-96i\cot^{-}\right.$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[ArcCot[a*x]^3/x,x]
```

```
[Out] (I/64)*(Pi^4 - 32*ArcCot[a*x]^4 + (64*I)*ArcCot[a*x]^3*Log[1 - E^((-2*I)*Ar
cCot[a*x])] - (64*I)*ArcCot[a*x]^3*Log[1 + E^((2*I)*ArcCot[a*x])] - 96*ArcC
ot[a*x]^2*PolyLog[2, E^((-2*I)*ArcCot[a*x])] - 96*ArcCot[a*x]^2*PolyLog[2,
-E^((2*I)*ArcCot[a*x])] + (96*I)*ArcCot[a*x]*PolyLog[3, E^((-2*I)*ArcCot[a*
x])] - (96*I)*ArcCot[a*x]*PolyLog[3, -E^((2*I)*ArcCot[a*x])] + 48*PolyLog[4
, E^((-2*I)*ArcCot[a*x])] + 48*PolyLog[4, -E^((2*I)*ArcCot[a*x])])
```

fricas [F] time = 0.62, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\text{arccot}\,(ax)^3}{x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(a*x)^3/x,x, algorithm="fricas")
```

```
[Out] integral(arccot(a*x)^3/x, x)
```

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

$$\int \frac{\text{arccot}\,(ax)^3}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(arccot(a*x)^3/x,x, algorithm="giac")

[Out] integrate(arccot(a*x)^3/x, x)

maple [C] time = 0.57, size = 1050, normalized size = 5.90

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

[In] int(arccot(a*x)^3/x,x)

[Out] ln(a*x)*arccot(a*x)^3+arccot(a*x)^3*ln((I+a*x)^2/(a^2*x^2+1)-1)-arccot(a*x)^3*ln(1+(I+a*x)/(a^2*x^2+1)^(1/2))+1/2*I*Pi*csgn(1/((I+a*x)^2/(a^2*x^2+1)-1)*((I+a*x)^2/(a^2*x^2+1)+1))^2*arccot(a*x)^3-6*arccot(a*x)*polylog(3,-(I+a*x)/(a^2*x^2+1)^(1/2))-1/2*I*Pi*csgn(1/((I+a*x)^2/(a^2*x^2+1)-1)*((I+a*x)^2/(a^2*x^2+1)+1))^3*arccot(a*x)^3-arccot(a*x)^3*ln(1-(I+a*x)/(a^2*x^2+1)^(1/2))-1/2*I*Pi*arccot(a*x)^3-6*arccot(a*x)*polylog(3,(I+a*x)/(a^2*x^2+1)^(1/2))-6*I*polylog(4,-(I+a*x)/(a^2*x^2+1)^(1/2))+1/2*I*Pi*csgn(I/((I+a*x)^2/(a^2*x^2+1)-1)*((I+a*x)^2/(a^2*x^2+1)+1))^3*arccot(a*x)^3-1/2*I*Pi*csgn(I/((I+a*x)^2/(a^2*x^2+1)-1)*((I+a*x)^2/(a^2*x^2+1)+1))*csgn(1/((I+a*x)^2/(a^2*x^2+1)-1)*((I+a*x)^2/(a^2*x^2+1)+1))^2*arccot(a*x)^3-3/2*I*arccot(a*x)^2*polylog(2,-(I+a*x)^2/(a^2*x^2+1))+3/4*I*polylog(4,-(I+a*x)^2/(a^2*x^2+1))-1/2*I*Pi*csgn(I/((I+a*x)^2/(a^2*x^2+1)-1)*((I+a*x)^2/(a^2*x^2+1)+1))^2*csgn(I*((I+a*x)^2/(a^2*x^2+1)+1))*arccot(a*x)^3+1/2*I*Pi*csgn(I/((I+a*x)^2/(a^2*x^2+1)-1))*csgn(I/((I+a*x)^2/(a^2*x^2+1)-1)*((I+a*x)^2/(a^2*x^2+1)+1))*csgn(I*((I+a*x)^2/(a^2*x^2+1)+1))*arccot(a*x)^3-1/2*I*Pi*csgn(I/((I+a*x)^2/(a^2*x^2+1)-1))*csgn(I/((I+a*x)^2/(a^2*x^2+1)-1)*((I+a*x)^2/(a^2*x^2+1)+1))^2*arccot(a*x)^3+3/2*arccot(a*x)*polylog(3,-(I+a*x)^2/(a^2*x^2+1))+1/2*I*Pi*csgn(I/((I+a*x)^2/(a^2*x^2+1)-1)*((I+a*x)^2/(a^2*x^2+1)+1))*csgn(1/((I+a*x)^2/(a^2*x^2+1)-1)*((I+a*x)^2/(a^2*x^2+1)+1))*arccot(a*x)^3-6*I*polylog(4,(I+a*x)/(a^2*x^2+1)^(1/2))+3*I*arccot(a*x)^2*polylog(2,-(I+a*x)/(a^2*x^2+1)^(1/2))+3*I*arccot(a*x)^2*polylog(2,(I+a*x)/(a^2*x^2+1)^(1/2))

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

$$\int \frac{\operatorname{arccot}(ax)^3}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(arccot(a*x)^3/x,x, algorithm="maxima")

[Out] integrate(arccot(a*x)^3/x, x)

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

$$\int \frac{\operatorname{acot}(a\,x)^3}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(acot(a*x)^3/x,x)

[Out] int(acot(a*x)^3/x, x)

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

$$\int \frac{\operatorname{acot}^3(ax)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(acot(a*x)**3/x,x)
[Out] Integral(acot(a*x)**3/x, x)
```

3.30 $\int \frac{\cot^{-1}(ax)^3}{x^2}\,dx$

Optimal. Leaf size=93

$$-\frac{3}{2}a\text{Li}_3\left(\frac{2}{1-iax}-1\right)-3ia\text{Li}_2\left(\frac{2}{1-iax}-1\right)\cot^{-1}(ax)-ia\cot^{-1}(ax)^3-\frac{\cot^{-1}(ax)^3}{x}-3a\log\left(2-\frac{2}{1-iax}\right)\cot^{-1}(a$$

```
[Out] -I*a*arccot(a*x)^3-arccot(a*x)^3/x-3*a*arccot(a*x)^2*ln(2-2/(1-I*a*x))-3*I*
a*arccot(a*x)*polylog(2,-1+2/(1-I*a*x))-3/2*a*polylog(3,-1+2/(1-I*a*x))
```

Rubi [A] time = 0.19, antiderivative size = 93, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 6, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}} = 0.600$, Rules used = {4853, 4925, 4869, 4885, 4993, 6610}

$$-\frac{3}{2}a\text{PolyLog}\left(3,-1+\frac{2}{1-iax}\right)-3ia\cot^{-1}(ax)\text{PolyLog}\left(2,-1+\frac{2}{1-iax}\right)-ia\cot^{-1}(ax)^3-\frac{\cot^{-1}(ax)^3}{x}-3a\log\left(2\right.$$

Antiderivative was successfully verified.

```
[In] Int[ArcCot[a*x]^3/x^2,x]
```

```
[Out] (-I)*a*ArcCot[a*x]^3 - ArcCot[a*x]^3/x - 3*a*ArcCot[a*x]^2*Log[2 - 2/(1 - I
*a*x)] - (3*I)*a*ArcCot[a*x]*PolyLog[2, -1 + 2/(1 - I*a*x)] - (3*a*PolyLog[
3, -1 + 2/(1 - I*a*x)])/2
```

Rule 4853

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcCot[c*x])^p)/(d*(m + 1)), x] + Dist[(b*c*p
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcCot[c*x])^(p - 1))/(1 + c^2*x^2
), x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[p, 0] && (EqQ[p, 1] || Integ
erQ[m]) && NeQ[m, -1]
```

Rule 4869

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_))), x_
Symbol] :> Simp[((a + b*ArcCot[c*x])^p*Log[2 - 2/(1 + (e*x)/d)])/d, x] + Di
st[(b*c*p)/d, Int[((a + b*ArcCot[c*x])^(p - 1)*Log[2 - 2/(1 + (e*x)/d)])/(1
 + c^2*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[p, 0] && EqQ[c^2*d
^2 + e^2, 0]
```

Rule 4885

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)^2), x_Symbo
l] :> -Simp[(a + b*ArcCot[c*x])^(p + 1)/(b*c*d*(p + 1)), x] /; FreeQ[{a, b,
 c, d, e, p}, x] && EqQ[e, c^2*d] && NeQ[p, -1]
```

Rule 4925

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_)^2)),
x_Symbol] :> Simp[(I*(a + b*ArcCot[c*x])^(p + 1))/(b*d*(p + 1)), x] + Dist[
I/d, Int[(a + b*ArcCot[c*x])^p/(x*(I + c*x)), x], x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[e, c^2*d] && GtQ[p, 0]
```

Rule 4993

```
Int[(Log[u_]*((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.))/((d_) + (e_.)*(x_)^2
), x_Symbol] :> Simp[(I*(a + b*ArcCot[c*x])^p*PolyLog[2, 1 - u])/(2*c*d), x
] + Dist[(b*p*I)/2, Int[((a + b*ArcCot[c*x])^(p - 1)*PolyLog[2, 1 - u])/(d
+ e*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[p, 0] && EqQ[e, c^2*d
```

```
] && EqQ[(1 - u)^2 - (1 - (2*I)/(I + c*x))^2, 0]
```

Rule 6610

```
Int[(u_)*PolyLog[n_, v_], x_Symbol] :> With[{w = DerivativeDivides[v, u*v,
x]}, Simp[w*PolyLog[n + 1, v], x] /;  !FalseQ[w]] /; FreeQ[n, x]
```

Rubi steps

$$\int \frac{\cot^{-1}(ax)^3}{x^2}\,dx = -\frac{\cot^{-1}(ax)^3}{x} - (3a)\int \frac{\cot^{-1}(ax)^2}{x\left(1+a^2x^2\right)}\,dx$$
$$= -ia\cot^{-1}(ax)^3 - \frac{\cot^{-1}(ax)^3}{x} - (3ia)\int \frac{\cot^{-1}(ax)^2}{x(i+ax)}\,dx$$
$$= -ia\cot^{-1}(ax)^3 - \frac{\cot^{-1}(ax)^3}{x} - 3a\cot^{-1}(ax)^2\log\left(2-\frac{2}{1-iax}\right) - \left(6a^2\right)\int \frac{\cot^{-1}(ax)\log\left(2-\frac{}{1}\right.}{1+a^2x^2}$$
$$= -ia\cot^{-1}(ax)^3 - \frac{\cot^{-1}(ax)^3}{x} - 3a\cot^{-1}(ax)^2\log\left(2-\frac{2}{1-iax}\right) - 3ia\cot^{-1}(ax)\mathrm{Li}_2\left(-1+\frac{2}{1-ia}\right.$$
$$= -ia\cot^{-1}(ax)^3 - \frac{\cot^{-1}(ax)^3}{x} - 3a\cot^{-1}(ax)^2\log\left(2-\frac{2}{1-iax}\right) - 3ia\cot^{-1}(ax)\mathrm{Li}_2\left(-1+\frac{2}{1-ia}\right.$$

Mathematica [A] time = 0.08, size = 83, normalized size = 0.89

$$3ia\cot^{-1}(ax)\mathrm{Li}_2\left(-e^{2i\cot^{-1}(ax)}\right)-\frac{3}{2}a\mathrm{Li}_3\left(-e^{2i\cot^{-1}(ax)}\right)+\frac{(-1+iax)\cot^{-1}(ax)^3}{x}-3a\cot^{-1}(ax)^2\log\left(1+e^{2i\cot^{-1}(ax)}\right)$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[ArcCot[a*x]^3/x^2,x]
```

```
[Out] ((-1 + I*a*x)*ArcCot[a*x]^3)/x - 3*a*ArcCot[a*x]^2*Log[1 + E^((2*I)*ArcCot[
a*x])] + (3*I)*a*ArcCot[a*x]*PolyLog[2, -E^((2*I)*ArcCot[a*x])] - (3*a*Poly
Log[3, -E^((2*I)*ArcCot[a*x])])/2
```

fricas [F] time = 0.86, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\operatorname{arccot}(ax)^3}{x^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(a*x)^3/x^2,x, algorithm="fricas")
```

```
[Out] integral(arccot(a*x)^3/x^2, x)
```

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

$$\int \frac{\operatorname{arccot}(ax)^3}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(a*x)^3/x^2,x, algorithm="giac")
```

```
[Out] integrate(arccot(a*x)^3/x^2, x)
```

maple [C] time = 1.58, size = 1576, normalized size = 16.95

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arccot(a*x)^3/x^2,x)
```

```
[Out] -3/2*I*a*csgn(I/((I+a*x)^2/(a^2*x^2+1)-1)*((I+a*x)^2/(a^2*x^2+1)+1))*csgn(I
*((I+a*x)^2/(a^2*x^2+1)+1))*csgn(I/((I+a*x)^2/(a^2*x^2+1)-1))*arccot(a*x)^2
*Pi+I*a*arccot(a*x)^3-3*a*ln(a*x)*arccot(a*x)^2+3/2*a*arccot(a*x)^2*ln(a^2*
x^2+1)-3*a*arccot(a*x)^2*ln((I+a*x)/(a^2*x^2+1)^(1/2))-3*a*ln(2)*arccot(a*x
)^2-3/4*I*a*csgn(I*(I+a*x)^2/(a^2*x^2+1)/((I+a*x)^2/(a^2*x^2+1)-1)^2)^3*arc
cot(a*x)^2*Pi+3/4*I*a*csgn(I*(I+a*x)^2/(a^2*x^2+1))^3*arccot(a*x)^2*Pi+3*I*
a*arccot(a*x)*polylog(2,-(I+a*x)^2/(a^2*x^2+1))+3/4*I*a*csgn(I/((I+a*x)^2/(
a^2*x^2+1)-1)^2)*csgn(I*(I+a*x)^2/(a^2*x^2+1)/((I+a*x)^2/(a^2*x^2+1)-1)^2)*
csgn(I*(I+a*x)^2/(a^2*x^2+1))*arccot(a*x)^2*Pi+3/2*I*a*csgn(I/((I+a*x)^2/(a
^2*x^2+1)-1)*((I+a*x)^2/(a^2*x^2+1)+1))^2*csgn(I*((I+a*x)^2/(a^2*x^2+1)+1))
*arccot(a*x)^2*Pi+3/2*I*a*csgn(I/((I+a*x)^2/(a^2*x^2+1)-1)*((I+a*x)^2/(a^2*
x^2+1)+1))^2*csgn(I/((I+a*x)^2/(a^2*x^2+1)-1))*arccot(a*x)^2*Pi+3/2*I*a*csg
n(I/((I+a*x)^2/(a^2*x^2+1)-1)*((I+a*x)^2/(a^2*x^2+1)+1))*csgn(1/((I+a*x)^2/
(a^2*x^2+1)-1)*((I+a*x)^2/(a^2*x^2+1)+1))^2*arccot(a*x)^2*Pi-3/4*I*a*csgn(I
/((I+a*x)^2/(a^2*x^2+1)-1)^2)*csgn(I*(I+a*x)^2/(a^2*x^2+1)/((I+a*x)^2/(a^2*
x^2+1)-1)^2)^2*arccot(a*x)^2*Pi-3/4*I*a*csgn(I*(I+a*x)^2/(a^2*x^2+1)/((I+a*
x)^2/(a^2*x^2+1)-1)^2)^2*csgn(I*(I+a*x)^2/(a^2*x^2+1))*arccot(a*x)^2*Pi-3/2
*I*a*csgn(I*(I+a*x)^2/(a^2*x^2+1))^2*csgn(I*(I+a*x)/(a^2*x^2+1)^(1/2))*arcc
ot(a*x)^2*Pi+3/4*I*a*csgn(I*(I+a*x)^2/(a^2*x^2+1))*csgn(I*(I+a*x)/(a^2*x^2+
1)^(1/2))^2*arccot(a*x)^2*Pi+3/2*I*a*csgn(I*((I+a*x)^2/(a^2*x^2+1)-1)^2)^2*
csgn(I*((I+a*x)^2/(a^2*x^2+1)-1))*arccot(a*x)^2*Pi-3/4*I*a*csgn(I*((I+a*x)^
2/(a^2*x^2+1)-1)^2)*csgn(I*((I+a*x)^2/(a^2*x^2+1)-1))^2*arccot(a*x)^2*Pi-3/
2*I*a*csgn(I/((I+a*x)^2/(a^2*x^2+1)-1)*((I+a*x)^2/(a^2*x^2+1)+1))*csgn(1/((
I+a*x)^2/(a^2*x^2+1)-1)*((I+a*x)^2/(a^2*x^2+1)+1))*arccot(a*x)^2*Pi-3/2*I*a
*csgn(I/((I+a*x)^2/(a^2*x^2+1)-1)*((I+a*x)^2/(a^2*x^2+1)+1))^3*arccot(a*x)^
2*Pi+3/2*I*a*csgn(1/((I+a*x)^2/(a^2*x^2+1)-1)*((I+a*x)^2/(a^2*x^2+1)+1))^3*
arccot(a*x)^2*Pi-arccot(a*x)^3/x-3/2*a*polylog(3,-(I+a*x)^2/(a^2*x^2+1))-3/
4*I*a*csgn(I*((I+a*x)^2/(a^2*x^2+1)-1)^2)^3*arccot(a*x)^2*Pi-3/2*I*a*csgn(1
/((I+a*x)^2/(a^2*x^2+1)-1)*((I+a*x)^2/(a^2*x^2+1)+1))^2*arccot(a*x)^2*Pi+3/
2*I*a*csgn(I*(I+a*x)^2/(a^2*x^2+1)/((I+a*x)^2/(a^2*x^2+1)-1)^2)^2*arccot(a*
x)^2*Pi
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(a*x)^3/x^2,x, algorithm="maxima")
```

```
[Out] Timed out
```

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

$$\int \frac{\mathrm{acot}\left(a\,x\right)^3}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(acot(a*x)^3/x^2,x)
```

```
[Out] int(acot(a*x)^3/x^2, x)
```

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

$$\int \frac{\operatorname{acot}^3(ax)}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(acot(a*x)**3/x**2,x)
```

```
[Out] Integral(acot(a*x)**3/x**2, x)
```

3.31 $\int \frac{\cot^{-1}(ax)^3}{x^3} dx$

Optimal. Leaf size=105

$$\frac{3}{2}ia^2\text{Li}_2\left(\frac{2}{1-iax}-1\right)-\frac{1}{2}a^2\cot^{-1}(ax)^3+\frac{3}{2}ia^2\cot^{-1}(ax)^2+3a^2\log\left(2-\frac{2}{1-iax}\right)\cot^{-1}(ax)-\frac{\cot^{-1}(ax)^3}{2x^2}+\frac{3a\cot^{-1}}{2x}$$

```
[Out] 3/2*I*a^2*arccot(a*x)^2+3/2*a*arccot(a*x)^2/x-1/2*a^2*arccot(a*x)^3-1/2*arc
cot(a*x)^3/x^2+3*a^2*arccot(a*x)*ln(2-2/(1-I*a*x))+3/2*I*a^2*polylog(2,-1+2
/(1-I*a*x))
```

Rubi [A] time = 0.20, antiderivative size = 105, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.600, Rules used = {4853, 4919, 4925, 4869, 2447, 4885}

$$\frac{3}{2}ia^2\text{PolyLog}\left(2,-1+\frac{2}{1-iax}\right)-\frac{1}{2}a^2\cot^{-1}(ax)^3+\frac{3}{2}ia^2\cot^{-1}(ax)^2+3a^2\log\left(2-\frac{2}{1-iax}\right)\cot^{-1}(ax)-\frac{\cot^{-1}(ax)^3}{2x^2}$$

Antiderivative was successfully verified.

```
[In] Int[ArcCot[a*x]^3/x^3,x]
```

```
[Out] ((3*I)/2)*a^2*ArcCot[a*x]^2 + (3*a*ArcCot[a*x]^2)/(2*x) - (a^2*ArcCot[a*x]^
3)/2 - ArcCot[a*x]^3/(2*x^2) + 3*a^2*ArcCot[a*x]*Log[2 - 2/(1 - I*a*x)] + (
(3*I)/2)*a^2*PolyLog[2, -1 + 2/(1 - I*a*x)]
```

Rule 2447

```
Int[Log[u_]*(Pq_)^(m_.), x_Symbol] :> With[{C = FullSimplify[(Pq^m*(1 - u))
/D[u, x]]}, Simp[C*PolyLog[2, 1 - u], x] /; FreeQ[C, x]] /; IntegerQ[m] &&
PolyQ[Pq, x] && RationalFunctionQ[u, x] && LeQ[RationalFunctionExponents[u,
 x][[2]], Expon[Pq, x]]
```

Rule 4853

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcCot[c*x])^p)/(d*(m + 1)), x] + Dist[(b*c*p
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcCot[c*x])^(p - 1))/(1 + c^2*x^2
), x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[p, 0] && (EqQ[p, 1] || Integ
erQ[m]) && NeQ[m, -1]
```

Rule 4869

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_))), x_
Symbol] :> Simp[((a + b*ArcCot[c*x])^p*Log[2 - 2/(1 + (e*x)/d)])/d, x] + Di
st[(b*c*p)/d, Int[((a + b*ArcCot[c*x])^(p - 1)*Log[2 - 2/(1 + (e*x)/d)])/(1
 + c^2*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[p, 0] && EqQ[c^2*d
^2 + e^2, 0]
```

Rule 4885

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)^2), x_Symbo
l] :> -Simp[(a + b*ArcCot[c*x])^(p + 1)/(b*c*d*(p + 1)), x] /; FreeQ[{a, b,
 c, d, e, p}, x] && EqQ[e, c^2*d] && NeQ[p, -1]
```

Rule 4919

```
Int[(((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)*((f_.)*(x_))^(m_))/((d_) + (e
_.)*(x_)^2), x_Symbol] :> Dist[1/d, Int[(f*x)^m*(a + b*ArcCot[c*x])^p, x],
x] - Dist[e/(d*f^2), Int[((f*x)^(m + 2)*(a + b*ArcCot[c*x])^p)/(d + e*x^2),
```

```
x], x] /; FreeQ[{a, b, c, d, e, f}, x] && GtQ[p, 0] && LtQ[m, -1]
```

Rule 4925

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_)^2)),
x_Symbol] :> Simp[(I*(a + b*ArcCot[c*x])^(p + 1))/(b*d*(p + 1)), x] + Dist[
I/d, Int[(a + b*ArcCot[c*x])^p/(x*(I + c*x)), x], x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[e, c^2*d] && GtQ[p, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{\cot^{-1}(ax)^3}{x^3}\,dx &= -\frac{\cot^{-1}(ax)^3}{2x^2}-\frac{1}{2}(3a)\int \frac{\cot^{-1}(ax)^2}{x^2\left(1+a^2x^2\right)}\,dx\\
&= -\frac{\cot^{-1}(ax)^3}{2x^2}-\frac{1}{2}(3a)\int \frac{\cot^{-1}(ax)^2}{x^2}\,dx+\frac{1}{2}\left(3a^3\right)\int \frac{\cot^{-1}(ax)^2}{1+a^2x^2}\,dx\\
&= \frac{3a\cot^{-1}(ax)^2}{2x}-\frac{1}{2}a^2\cot^{-1}(ax)^3-\frac{\cot^{-1}(ax)^3}{2x^2}+\left(3a^2\right)\int \frac{\cot^{-1}(ax)}{x\left(1+a^2x^2\right)}\,dx\\
&= \frac{3}{2}ia^2\cot^{-1}(ax)^2+\frac{3a\cot^{-1}(ax)^2}{2x}-\frac{1}{2}a^2\cot^{-1}(ax)^3-\frac{\cot^{-1}(ax)^3}{2x^2}+\left(3ia^2\right)\int \frac{\cot^{-1}(ax)}{x(i+ax)}\,dx\\
&= \frac{3}{2}ia^2\cot^{-1}(ax)^2+\frac{3a\cot^{-1}(ax)^2}{2x}-\frac{1}{2}a^2\cot^{-1}(ax)^3-\frac{\cot^{-1}(ax)^3}{2x^2}+3a^2\cot^{-1}(ax)\log\left(2-\frac{2}{1-i}\right.\\
&= \frac{3}{2}ia^2\cot^{-1}(ax)^2+\frac{3a\cot^{-1}(ax)^2}{2x}-\frac{1}{2}a^2\cot^{-1}(ax)^3-\frac{\cot^{-1}(ax)^3}{2x^2}+3a^2\cot^{-1}(ax)\log\left(2-\frac{2}{1-i}\right.
\end{aligned}$$

Mathematica [A] time = 0.18, size = 90, normalized size = 0.86

$$-\frac{3}{2}ia^2\text{Li}_2\left(-e^{2i\cot^{-1}(ax)}\right)-\frac{\cot^{-1}(ax)\left(\left(a^2x^2+1\right)\cot^{-1}(ax)^2-6a^2x^2\log\left(1+e^{2i\cot^{-1}(ax)}\right)+3iax(ax+i)\cot^{-1}(ax)\right)}{2x^2}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[ArcCot[a*x]^3/x^3,x]
```

```
[Out] -1/2*(ArcCot[a*x]*((3*I)*a*x*(I + a*x)*ArcCot[a*x] + (1 + a^2*x^2)*ArcCot[a
*x]^2 - 6*a^2*x^2*Log[1 + E^((2*I)*ArcCot[a*x])]))/x^2 - ((3*I)/2)*a^2*Poly
Log[2, -E^((2*I)*ArcCot[a*x])]
```

fricas [F] time = 0.77, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\operatorname{arccot}(ax)^3}{x^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(a*x)^3/x^3,x, algorithm="fricas")
```

```
[Out] integral(arccot(a*x)^3/x^3, x)
```

giac [A] time = 0.15, size = 29, normalized size = 0.28

$$-\frac{1}{2}\,a\arctan\left(\frac{1}{ax}\right)^3-\frac{\arctan\left(\frac{1}{ax}\right)^3}{2\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(a*x)^3/x^3,x, algorithm="giac")
[Out] -1/2*a*arctan(1/(a*x))^3 - 1/2*arctan(1/(a*x))^3/x^2
```

maple [A] time = 0.76, size = 109, normalized size = 1.04

$$-\frac{\mathrm{arccot}(ax)^3}{2x^2}-\frac{a^2\mathrm{arccot}(ax)^3}{2}-\frac{3ia^2\mathrm{arccot}(ax)^2}{2}+\frac{3a\mathrm{arccot}(ax)^2}{2x}+3a^2\mathrm{arccot}(ax)\ln\left(\frac{(ax+i)^2}{a^2x^2+1}+1\right)-\frac{3ia^2\,\mathrm{pol}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arccot(a*x)^3/x^3,x)
[Out] -1/2*arccot(a*x)^3/x^2-1/2*a^2*arccot(a*x)^3-3/2*I*a^2*arccot(a*x)^2+3/2*a*
arccot(a*x)^2/x+3*a^2*arccot(a*x)*ln((I+a*x)^2/(a^2*x^2+1)+1)-3/2*I*a^2*pol
ylog(2,-(I+a*x)^2/(a^2*x^2+1))
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(a*x)^3/x^3,x, algorithm="maxima")
[Out] Timed out
```

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

$$\int \frac{\mathrm{acot}(a\,x)^3}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(acot(a*x)^3/x^3,x)
[Out] int(acot(a*x)^3/x^3, x)
```

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

$$\int \frac{\mathrm{acot}^3(ax)}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(acot(a*x)**3/x**3,x)
[Out] Integral(acot(a*x)**3/x**3, x)
```

3.32 $\int \frac{\cot^{-1}(ax)^3}{x^4}\,dx$

Optimal. Leaf size=167

$$\frac{1}{2}a^3\mathrm{Li}_3\left(\frac{2}{1-iax}-1\right)+ia^3\mathrm{Li}_2\left(\frac{2}{1-iax}-1\right)\cot^{-1}(ax)-a^3\log(x)+\frac{1}{3}ia^3\cot^{-1}(ax)^3+\frac{1}{2}a^3\cot^{-1}(ax)^2+a^3\log\left(2-\frac{}{1-}\right.$$

```
[Out] -a^2*arccot(a*x)/x+1/2*a^3*arccot(a*x)^2+1/2*a*arccot(a*x)^2/x^2+1/3*I*a^3*
arccot(a*x)^3-1/3*arccot(a*x)^3/x^3-a^3*ln(x)+1/2*a^3*ln(a^2*x^2+1)+a^3*arc
cot(a*x)^2*ln(2-2/(1-I*a*x))+I*a^3*arccot(a*x)*polylog(2,-1+2/(1-I*a*x))+1/
2*a^3*polylog(3,-1+2/(1-I*a*x))
```

Rubi [A] time = 0.34, antiderivative size = 167, normalized size of antiderivative = 1.00, number of steps used = 14, number of rules used = 11, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}$ = 1.100, Rules used = {4853, 4919, 266, 36, 29, 31, 4885, 4925, 4869, 4993, 6610}

$$\frac{1}{2}a^3\text{PolyLog}\left(3,-1+\frac{2}{1-iax}\right)+ia^3\cot^{-1}(ax)\text{PolyLog}\left(2,-1+\frac{2}{1-iax}\right)+\frac{1}{2}a^3\log\left(a^2x^2+1\right)-a^3\log(x)+\frac{1}{3}ia^3\cot$$

Antiderivative was successfully verified.

```
[In] Int[ArcCot[a*x]^3/x^4,x]
```

```
[Out] -((a^2*ArcCot[a*x])/x) + (a^3*ArcCot[a*x]^2)/2 + (a*ArcCot[a*x]^2)/(2*x^2)
+ (I/3)*a^3*ArcCot[a*x]^3 - ArcCot[a*x]^3/(3*x^3) - a^3*Log[x] + (a^3*Log[1
 + a^2*x^2])/2 + a^3*ArcCot[a*x]^2*Log[2 - 2/(1 - I*a*x)] + I*a^3*ArcCot[a*
x]*PolyLog[2, -1 + 2/(1 - I*a*x)] + (a^3*PolyLog[3, -1 + 2/(1 - I*a*x)])/2
```

Rule 29

```
Int[(x_)^(-1), x_Symbol] :> Simp[Log[x], x]
```

Rule 31

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

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
 x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 4853

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcCot[c*x])^p)/(d*(m + 1)), x] + Dist[(b*c*p
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcCot[c*x])^(p - 1))/(1 + c^2*x^2
), x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[p, 0] && (EqQ[p, 1] || Integ
erQ[m]) && NeQ[m, -1]
```

Rule 4869

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_))), x_
Symbol] :> Simp[((a + b*ArcCot[c*x])^p*Log[2 - 2/(1 + (e*x)/d)])/d, x] + Di
st[(b*c*p)/d, Int[((a + b*ArcCot[c*x])^(p - 1)*Log[2 - 2/(1 + (e*x)/d)])/(1
 + c^2*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[p, 0] && EqQ[c^2*d
^2 + e^2, 0]
```

Rule 4885

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)^2), x_Symbo
l] :> -Simp[(a + b*ArcCot[c*x])^(p + 1)/(b*c*d*(p + 1)), x] /; FreeQ[{a, b,
 c, d, e, p}, x] && EqQ[e, c^2*d] && NeQ[p, -1]
```

Rule 4919

```
Int[(((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)*((f_.)*(x_))^(m_))/((d_) + (e
_.)*(x_)^2), x_Symbol] :> Dist[1/d, Int[(f*x)^m*(a + b*ArcCot[c*x])^p, x],
x] - Dist[e/(d*f^2), Int[((f*x)^(m + 2)*(a + b*ArcCot[c*x])^p)/(d + e*x^2),
 x], x] /; FreeQ[{a, b, c, d, e, f}, x] && GtQ[p, 0] && LtQ[m, -1]
```

Rule 4925

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_)^2)),
x_Symbol] :> Simp[(I*(a + b*ArcCot[c*x])^(p + 1))/(b*d*(p + 1)), x] + Dist[
I/d, Int[(a + b*ArcCot[c*x])^p/(x*(I + c*x)), x], x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[e, c^2*d] && GtQ[p, 0]
```

Rule 4993

```
Int[(Log[u_]*((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.))/((d_) + (e_.)*(x_)^2
), x_Symbol] :> Simp[(I*(a + b*ArcCot[c*x])^p*PolyLog[2, 1 - u])/(2*c*d), x
] + Dist[(b*p*I)/2, Int[((a + b*ArcCot[c*x])^(p - 1)*PolyLog[2, 1 - u])/(d
+ e*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[p, 0] && EqQ[e, c^2*d
] && EqQ[(1 - u)^2 - (1 - (2*I)/(I + c*x))^2, 0]
```

Rule 6610

```
Int[(u_)*PolyLog[n_, v_], x_Symbol] :> With[{w = DerivativeDivides[v, u*v,
x]}, Simp[w*PolyLog[n + 1, v], x] /;  !FalseQ[w]] /; FreeQ[n, x]
```

Rubi steps

$$\int \frac{\cot^{-1}(ax)^3}{x^4}\,dx = -\frac{\cot^{-1}(ax)^3}{3x^3} - a\int \frac{\cot^{-1}(ax)^2}{x^3\left(1+a^2x^2\right)}\,dx$$
$$= -\frac{\cot^{-1}(ax)^3}{3x^3} - a\int \frac{\cot^{-1}(ax)^2}{x^3}\,dx + a^3\int \frac{\cot^{-1}(ax)^2}{x\left(1+a^2x^2\right)}\,dx$$
$$= \frac{a\cot^{-1}(ax)^2}{2x^2} + \frac{1}{3}ia^3\cot^{-1}(ax)^3 - \frac{\cot^{-1}(ax)^3}{3x^3} + a^2\int \frac{\cot^{-1}(ax)}{x^2\left(1+a^2x^2\right)}\,dx + \left(ia^3\right)\int \frac{\cot^{-1}(ax)^2}{x(i+ax)}\,d$$
$$= \frac{a\cot^{-1}(ax)^2}{2x^2} + \frac{1}{3}ia^3\cot^{-1}(ax)^3 - \frac{\cot^{-1}(ax)^3}{3x^3} + a^3\cot^{-1}(ax)^2\log\left(2-\frac{2}{1-iax}\right) + a^2\int \frac{\cot^{-1}(}{x^2}$$
$$= -\frac{a^2\cot^{-1}(ax)}{x} + \frac{1}{2}a^3\cot^{-1}(ax)^2 + \frac{a\cot^{-1}(ax)^2}{2x^2} + \frac{1}{3}ia^3\cot^{-1}(ax)^3 - \frac{\cot^{-1}(ax)^3}{3x^3} + a^3\cot^{-1}(ax$$
$$= -\frac{a^2\cot^{-1}(ax)}{x} + \frac{1}{2}a^3\cot^{-1}(ax)^2 + \frac{a\cot^{-1}(ax)^2}{2x^2} + \frac{1}{3}ia^3\cot^{-1}(ax)^3 - \frac{\cot^{-1}(ax)^3}{3x^3} + a^3\cot^{-1}(ax$$
$$= -\frac{a^2\cot^{-1}(ax)}{x} + \frac{1}{2}a^3\cot^{-1}(ax)^2 + \frac{a\cot^{-1}(ax)^2}{2x^2} + \frac{1}{3}ia^3\cot^{-1}(ax)^3 - \frac{\cot^{-1}(ax)^3}{3x^3} + a^3\cot^{-1}(ax$$
$$= -\frac{a^2\cot^{-1}(ax)}{x} + \frac{1}{2}a^3\cot^{-1}(ax)^2 + \frac{a\cot^{-1}(ax)^2}{2x^2} + \frac{1}{3}ia^3\cot^{-1}(ax)^3 - \frac{\cot^{-1}(ax)^3}{3x^3} - a^3\log(x) +$$

Mathematica [A] time = 0.26, size = 151, normalized size = 0.90

$$\frac{1}{6}\left(-6ia^3\cot^{-1}(ax)\text{Li}_2\left(-e^{2i\cot^{-1}(ax)}\right) + 3a^3\text{Li}_3\left(-e^{2i\cot^{-1}(ax)}\right) - 2ia^3\cot^{-1}(ax)^3 + 3a^3\cot^{-1}(ax)^2 + 6a^3\cot^{-1}(ax)^2\text{lo}\right.$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[ArcCot[a*x]^3/x^4,x]
```

```
[Out] ((-6*a^2*ArcCot[a*x])/x + 3*a^3*ArcCot[a*x]^2 + (3*a*ArcCot[a*x]^2)/x^2 - (
2*I)*a^3*ArcCot[a*x]^3 - (2*ArcCot[a*x]^3)/x^3 + 6*a^3*ArcCot[a*x]^2*Log[1
+ E^((2*I)*ArcCot[a*x])] - 6*a^3*Log[1/Sqrt[1 + 1/(a^2*x^2)]] - (6*I)*a^3*A
rcCot[a*x]*PolyLog[2, -E^((2*I)*ArcCot[a*x])] + 3*a^3*PolyLog[3, -E^((2*I)*
ArcCot[a*x])])/6
```

fricas [F] time = 0.53, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\text{arccot}(ax)^3}{x^4}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(a*x)^3/x^4,x, algorithm="fricas")
```

```
[Out] integral(arccot(a*x)^3/x^4, x)
```

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

$$\int \frac{\text{arccot}(ax)^3}{x^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(a*x)^3/x^4,x, algorithm="giac")
```

```
[Out] integrate(arccot(a*x)^3/x^4, x)
```

maple [C] time = 5.04, size = 5029, normalized size = 30.11

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arccot(a*x)^3/x^4,x)
```

```
[Out] result too large to display
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(a*x)^3/x^4,x, algorithm="maxima")
```

```
[Out] Timed out
```

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

$$\int \frac{\mathrm{acot}\left(a\,x\right)^3}{x^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(acot(a*x)^3/x^4,x)
```

```
[Out] int(acot(a*x)^3/x^4, x)
```

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

$$\int \frac{\operatorname{acot}^{3}{\left(ax \right)}}{x^{4}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(acot(a*x)**3/x**4,x)
```

```
[Out] Integral(acot(a*x)**3/x**4, x)
```

3.33 $\int \frac{\cot^{-1}(ax)^3}{x^5} dx$

Optimal. Leaf size=152

$$-ia^4\text{Li}_2\left(\frac{2}{1-iax}-1\right)+\frac{1}{4}a^4\tan^{-1}(ax)+\frac{1}{4}a^4\cot^{-1}(ax)^3-ia^4\cot^{-1}(ax)^2-2a^4\log\left(2-\frac{2}{1-iax}\right)\cot^{-1}(ax)+\frac{a^3}{4x}-\frac{3a^3 c}{}$$

```
[Out] 1/4*a^3/x-1/4*a^2*arccot(a*x)/x^2-I*a^4*arccot(a*x)^2+1/4*a*arccot(a*x)^2/x
^3-3/4*a^3*arccot(a*x)^2/x+1/4*a^4*arccot(a*x)^3-1/4*arccot(a*x)^3/x^4+1/4*
a^4*arctan(a*x)-2*a^4*arccot(a*x)*ln(2-2/(1-I*a*x))-I*a^4*polylog(2,-1+2/(1
-I*a*x))
```

Rubi [A] time = 0.42, antiderivative size = 152, normalized size of antiderivative = 1.00, number of steps used = 16, number of rules used = 8, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.800, Rules used = {4853, 4919, 325, 203, 4925, 4869, 2447, 4885}

$$-ia^4\text{PolyLog}\left(2,-1+\frac{2}{1-iax}\right)-\frac{a^2\cot^{-1}(ax)}{4x^2}+\frac{a^3}{4x}+\frac{1}{4}a^4\tan^{-1}(ax)+\frac{1}{4}a^4\cot^{-1}(ax)^3-ia^4\cot^{-1}(ax)^2-\frac{3a^3\cot^{-1}(ax)^2}{4x}$$

Antiderivative was successfully verified.

```
[In] Int[ArcCot[a*x]^3/x^5,x]
```

```
[Out] a^3/(4*x) - (a^2*ArcCot[a*x])/(4*x^2) - I*a^4*ArcCot[a*x]^2 + (a*ArcCot[a*x
]^2)/(4*x^3) - (3*a^3*ArcCot[a*x]^2)/(4*x) + (a^4*ArcCot[a*x]^3)/4 - ArcCot
[a*x]^3/(4*x^4) + (a^4*ArcTan[a*x])/4 - 2*a^4*ArcCot[a*x]*Log[2 - 2/(1 - I*
a*x)] - I*a^4*PolyLog[2, -1 + 2/(1 - I*a*x)]
```

Rule 203

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

Rule 325

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

Rule 2447

```
Int[Log[u_]*(Pq_)^(m_.), x_Symbol] :> With[{C = FullSimplify[(Pq^m*(1 - u))
/D[u, x]]}, Simp[C*PolyLog[2, 1 - u], x] /; FreeQ[C, x]] /; IntegerQ[m] &&
PolyQ[Pq, x] && RationalFunctionQ[u, x] && LeQ[RationalFunctionExponents[u,
 x][[2]], Expon[Pq, x]]
```

Rule 4853

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcCot[c*x])^p)/(d*(m + 1)), x] + Dist[(b*c*p
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcCot[c*x])^(p - 1))/(1 + c^2*x^2
), x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[p, 0] && (EqQ[p, 1] || Integ
erQ[m]) && NeQ[m, -1]
```

Rule 4869

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_))), x_
Symbol] :> Simp[((a + b*ArcCot[c*x])^p*Log[2 - 2/(1 + (e*x)/d)])/d, x] + Di
st[(b*c*p)/d, Int[((a + b*ArcCot[c*x])^(p - 1)*Log[2 - 2/(1 + (e*x)/d)])/(1
 + c^2*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[p, 0] && EqQ[c^2*d
^2 + e^2, 0]
```

Rule 4885

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)^2), x_Symbo
l] :> -Simp[(a + b*ArcCot[c*x])^(p + 1)/(b*c*d*(p + 1)), x] /; FreeQ[{a, b,
 c, d, e, p}, x] && EqQ[e, c^2*d] && NeQ[p, -1]
```

Rule 4919

```
Int[(((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)*((f_.)*(x_))^(m_))/((d_) + (e
_.)*(x_)^2), x_Symbol] :> Dist[1/d, Int[(f*x)^m*(a + b*ArcCot[c*x])^p, x],
x] - Dist[e/(d*f^2), Int[((f*x)^(m + 2)*(a + b*ArcCot[c*x])^p)/(d + e*x^2),
 x], x] /; FreeQ[{a, b, c, d, e, f}, x] && GtQ[p, 0] && LtQ[m, -1]
```

Rule 4925

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_)^2)),
x_Symbol] :> Simp[(I*(a + b*ArcCot[c*x])^(p + 1))/(b*d*(p + 1)), x] + Dist[
I/d, Int[(a + b*ArcCot[c*x])^p/(x*(I + c*x)), x], x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[e, c^2*d] && GtQ[p, 0]
```

Rubi steps

$$\int \frac{\cot^{-1}(ax)^3}{x^5}\,dx = -\frac{\cot^{-1}(ax)^3}{4x^4} - \frac{1}{4}(3a)\int \frac{\cot^{-1}(ax)^2}{x^4\left(1+a^2x^2\right)}\,dx$$

$$= -\frac{\cot^{-1}(ax)^3}{4x^4} - \frac{1}{4}(3a)\int \frac{\cot^{-1}(ax)^2}{x^4}\,dx + \frac{1}{4}\left(3a^3\right)\int \frac{\cot^{-1}(ax)^2}{x^2\left(1+a^2x^2\right)}\,dx$$

$$= \frac{a\cot^{-1}(ax)^2}{4x^3} - \frac{\cot^{-1}(ax)^3}{4x^4} + \frac{1}{2}a^2\int \frac{\cot^{-1}(ax)}{x^3\left(1+a^2x^2\right)}\,dx + \frac{1}{4}\left(3a^3\right)\int \frac{\cot^{-1}(ax)^2}{x^2}\,dx - \frac{1}{4}\left(3a^5\right.$$

$$= \frac{a\cot^{-1}(ax)^2}{4x^3} - \frac{3a^3\cot^{-1}(ax)^2}{4x} + \frac{1}{4}a^4\cot^{-1}(ax)^3 - \frac{\cot^{-1}(ax)^3}{4x^4} + \frac{1}{2}a^2\int \frac{\cot^{-1}(ax)}{x^3}\,dx - \frac{1}{2}a$$

$$= -\frac{a^2\cot^{-1}(ax)}{4x^2} - ia^4\cot^{-1}(ax)^2 + \frac{a\cot^{-1}(ax)^2}{4x^3} - \frac{3a^3\cot^{-1}(ax)^2}{4x} + \frac{1}{4}a^4\cot^{-1}(ax)^3 - \frac{\cot^{-1}(}{4x}$$

$$= \frac{a^3}{4x} - \frac{a^2\cot^{-1}(ax)}{4x^2} - ia^4\cot^{-1}(ax)^2 + \frac{a\cot^{-1}(ax)^2}{4x^3} - \frac{3a^3\cot^{-1}(ax)^2}{4x} + \frac{1}{4}a^4\cot^{-1}(ax)^3 - $$

$$= \frac{a^3}{4x} - \frac{a^2\cot^{-1}(ax)}{4x^2} - ia^4\cot^{-1}(ax)^2 + \frac{a\cot^{-1}(ax)^2}{4x^3} - \frac{3a^3\cot^{-1}(ax)^2}{4x} + \frac{1}{4}a^4\cot^{-1}(ax)^3 - $$

Mathematica [A] time = 0.28, size = 126, normalized size = 0.83

$$\frac{4ia^4x^4\text{Li}_2\left(-e^{2i\cot^{-1}(ax)}\right) + \left(a^4x^4-1\right)\cot^{-1}(ax)^3 + a^3x^3 - a^2x^2\cot^{-1}(ax)\left(a^2x^2 + 8a^2x^2\log\left(1+e^{2i\cot^{-1}(ax)}\right) + 1\right.}{4x^4}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[ArcCot[a*x]^3/x^5,x]
```

```
[Out] (a^3*x^3 + (a*x - 3*a^3*x^3 + (4*I)*a^4*x^4)*ArcCot[a*x]^2 + (-1 + a^4*x^4)
*ArcCot[a*x]^3 - a^2*x^2*ArcCot[a*x]*(1 + a^2*x^2 + 8*a^2*x^2*Log[1 + E^((2
*I)*ArcCot[a*x])]) + (4*I)*a^4*x^4*PolyLog[2, -E^((2*I)*ArcCot[a*x])])/(4*x
^4)
```

fricas [F] time = 0.73, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\operatorname{arccot}(ax)^3}{x^5}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(a*x)^3/x^5,x, algorithm="fricas")
```

```
[Out] integral(arccot(a*x)^3/x^5, x)
```

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

$$\int \frac{\operatorname{arccot}(ax)^3}{x^5}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(a*x)^3/x^5,x, algorithm="giac")
```

```
[Out] integrate(arccot(a*x)^3/x^5, x)
```

maple [A] time = 1.59, size = 158, normalized size = 1.04

$$-\frac{\operatorname{arccot}(ax)^3}{4x^4}+\frac{a^4\operatorname{arccot}(ax)^3}{4}+ia^4\operatorname{arccot}(ax)^2-\frac{a^4\operatorname{arccot}(ax)}{4}-\frac{3a^3\operatorname{arccot}(ax)^2}{4x}+\frac{ia^4}{4}+\frac{a^3}{4x}-\frac{a^2\operatorname{arccot}(ax)}{4x^2}+\frac{a\operatorname{arcc}}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arccot(a*x)^3/x^5,x)
```

```
[Out] -1/4*arccot(a*x)^3/x^4+1/4*a^4*arccot(a*x)^3+I*a^4*arccot(a*x)^2-1/4*a^4*ar
ccot(a*x)-3/4*a^3*arccot(a*x)^2/x+1/4*I*a^4+1/4*a^3/x-1/4*a^2*arccot(a*x)/x
^2+1/4*a*arccot(a*x)^2/x^3-2*a^4*arccot(a*x)*ln((I+a*x)^2/(a^2*x^2+1)+1)+I*
a^4*polylog(2,-(I+a*x)^2/(a^2*x^2+1))
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(a*x)^3/x^5,x, algorithm="maxima")
```

```
[Out] Timed out
```

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

$$\int \frac{\operatorname{acot}(a\,x)^3}{x^5}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(acot(a*x)^3/x^5,x)
```

```
[Out] int(acot(a*x)^3/x^5, x)
```

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

$$\int \frac{\operatorname{acot}^3(ax)}{x^5}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(acot(a*x)**3/x**5,x)
```

```
[Out] Integral(acot(a*x)**3/x**5, x)
```

3.34 $\int x^m \cot^{-1}(ax)^3 \, dx$

Optimal. Leaf size=13

$$\text{Int}\left(x^m \cot^{-1}(ax)^3, x\right)$$

```
[Out] Unintegrable(x^m*arccot(a*x)^3,x)
```

Rubi [A] time = 0.01, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int x^m \cot^{-1}(ax)^3 \, dx$$

Verification is Not applicable to the result.

```
[In] Int[x^m*ArcCot[a*x]^3,x]
[Out] Defer[Int][x^m*ArcCot[a*x]^3, x]
```

Rubi steps

$$\int x^m \cot^{-1}(ax)^3 \, dx = \int x^m \cot^{-1}(ax)^3 \, dx$$

Mathematica [A] time = 0.94, size = 0, normalized size = 0.00

$$\int x^m \cot^{-1}(ax)^3 \, dx$$

Verification is Not applicable to the result.

```
[In] Integrate[x^m*ArcCot[a*x]^3,x]
[Out] Integrate[x^m*ArcCot[a*x]^3, x]
```

fricas [A] time = 0.55, size = 0, normalized size = 0.00

$$\text{integral}\left(x^m \operatorname{arccot}(ax)^3, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*arccot(a*x)^3,x, algorithm="fricas")
[Out] integral(x^m*arccot(a*x)^3, x)
```

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

$$\int x^m \operatorname{arccot}(ax)^3 \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*arccot(a*x)^3,x, algorithm="giac")
[Out] integrate(x^m*arccot(a*x)^3, x)
```

maple [A] time = 1.84, size = 0, normalized size = 0.00

$$\int x^m \operatorname{arccot}(ax)^3 \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m*arccot(a*x)^3,x)
```

```
[Out] int(x^m*arccot(a*x)^3,x)
```

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

$$\frac{\frac{15}{2}\,xx^m \arctan\left(1,ax\right)^3 - \frac{21}{8}\,xx^m \arctan\left(1,ax\right)\log\left(a^2x^2+1\right)^2 + (m+1)\int \frac{84\,a^2x^2x^m \arctan(1,ax)\log\left(a^2x^2+1\right)+21\left(\left(a^2m\right.\right.}{}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*arccot(a*x)^3,x, algorithm="maxima")
```

```
[Out] 1/32*(4*x*x^m*arctan2(1, a*x)^3 - 3*x*x^m*arctan2(1, a*x)*log(a^2*x^2 + 1)^
2 + 32*(m + 1)*integrate(1/32*(12*a^2*x^2*x^m*arctan2(1, a*x)*log(a^2*x^2 +
 1) + 3*((a^2*m*arctan2(1, a*x) + a^2*arctan2(1, a*x))*x^2 - a*x + m*arctan
2(1, a*x) + arctan2(1, a*x))*x^m*log(a^2*x^2 + 1)^2 + 4*(3*a*x*arctan2(1, a
*x)^2 + 7*m*arctan2(1, a*x)^3 + 7*(a^2*m*arctan2(1, a*x)^3 + a^2*arctan2(1,
 a*x)^3)*x^2 + 7*arctan2(1, a*x)^3)*x^m)/((a^2*m + a^2)*x^2 + m + 1), x))/(
m + 1)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.08

$$\int x^m \operatorname{acot}\left(a\,x\right)^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m*acot(a*x)^3,x)
```

```
[Out] int(x^m*acot(a*x)^3, x)
```

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

$$\int x^m \operatorname{acot}^3\left(ax\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**m*acot(a*x)**3,x)
```

```
[Out] Integral(x**m*acot(a*x)**3, x)
```

3.35 $\int x^m \cot^{-1}(ax)^2 \, dx$

Optimal. Leaf size=13

$$\text{Int}\left(x^m \cot^{-1}(ax)^2, x\right)$$

```
[Out] Unintegrable(x^m*arccot(a*x)^2,x)
```

Rubi [A] time = 0.01, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int x^m \cot^{-1}(ax)^2 \, dx$$

Verification is Not applicable to the result.

```
[In] Int[x^m*ArcCot[a*x]^2,x]
[Out] Defer[Int][x^m*ArcCot[a*x]^2, x]
```

Rubi steps

$$\int x^m \cot^{-1}(ax)^2 \, dx = \int x^m \cot^{-1}(ax)^2 \, dx$$

Mathematica [A] time = 0.93, size = 0, normalized size = 0.00

$$\int x^m \cot^{-1}(ax)^2 \, dx$$

Verification is Not applicable to the result.

```
[In] Integrate[x^m*ArcCot[a*x]^2,x]
[Out] Integrate[x^m*ArcCot[a*x]^2, x]
```

fricas [A] time = 0.58, size = 0, normalized size = 0.00

$$\text{integral}\left(x^m \operatorname{arccot}(ax)^2, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*arccot(a*x)^2,x, algorithm="fricas")
[Out] integral(x^m*arccot(a*x)^2, x)
```

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

$$\int x^m \operatorname{arccot}(ax)^2 \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*arccot(a*x)^2,x, algorithm="giac")
[Out] integrate(x^m*arccot(a*x)^2, x)
```

maple [A] time = 1.35, size = 0, normalized size = 0.00

$$\int x^m \operatorname{arccot}(ax)^2 \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m*arccot(a*x)^2,x)
```

```
[Out] int(x^m*arccot(a*x)^2,x)
```

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

$$\frac{7\,xx^m \arctan\left(1, ax\right)^2 - \frac{3}{4}\,xx^m \log\left(a^2x^2+1\right)^2 + (m+1)\int \frac{12\,a^2x^2x^m \log\left(a^2x^2+1\right)+3\left(\left(a^2m+a^2\right)x^2+m+1\right)x^m \log\left(a^2x^2+1\right)^2+4\,(\cdots}{\cdots}}{16\,(m+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*arccot(a*x)^2,x, algorithm="maxima")
```

```
[Out] 1/16*(4*x*x^m*arctan2(1, a*x)^2 - x*x^m*log(a^2*x^2 + 1)^2 + 16*(m + 1)*int
egrate(1/16*(4*a^2*x^2*x^m*log(a^2*x^2 + 1) + ((a^2*m + a^2)*x^2 + m + 1)*x
^m*log(a^2*x^2 + 1)^2 + 4*(3*(a^2*m*arctan2(1, a*x)^2 + a^2*arctan2(1, a*x)
^2)*x^2 + 2*a*x*arctan2(1, a*x) + 3*m*arctan2(1, a*x)^2 + 3*arctan2(1, a*x)
^2)*x^m)/((a^2*m + a^2)*x^2 + m + 1), x))/(m + 1)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.08

$$\int x^m\,\mathrm{acot}\left(a\,x\right)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m*acot(a*x)^2,x)
```

```
[Out] int(x^m*acot(a*x)^2, x)
```

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

$$\int x^{m} \operatorname{acot}^{2}{\left (a x \right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**m*acot(a*x)**2,x)
```

```
[Out] Integral(x**m*acot(a*x)**2, x)
```

3.36 $\int x^m \cot^{-1}(ax)\,dx$

Optimal. Leaf size=57

$$\frac{ax^{m+2}\,{}_2F_1\left(1,\frac{m+2}{2};\frac{m+4}{2};-a^2x^2\right)}{m^2+3m+2}+\frac{x^{m+1}\cot^{-1}(ax)}{m+1}$$

```
[Out] x^(1+m)*arccot(a*x)/(1+m)+a*x^(2+m)*hypergeom([1, 1+1/2*m],[2+1/2*m],-a^2*x
^2)/(m^2+3*m+2)
```

Rubi [A] time = 0.02, antiderivative size = 57, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 8, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {4853, 364}

$$\frac{ax^{m+2}\,{}_2F_1\left(1,\frac{m+2}{2};\frac{m+4}{2};-a^2x^2\right)}{m^2+3m+2}+\frac{x^{m+1}\cot^{-1}(ax)}{m+1}$$

Antiderivative was successfully verified.

```
[In] Int[x^m*ArcCot[a*x],x]
```

```
[Out] (x^(1 + m)*ArcCot[a*x])/(1 + m) + (a*x^(2 + m)*Hypergeometric2F1[1, (2 + m)
/2, (4 + m)/2, -(a^2*x^2)])/(2 + 3*m + m^2)
```

Rule 364

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a^
p*(c*x)^(m + 1)*Hypergeometric2F1[-p, (m + 1)/n, (m + 1)/n + 1, -((b*x^n)/a
)])/(c*(m + 1)), x] /; FreeQ[{a, b, c, m, n, p}, x] &&  !IGtQ[p, 0] && (ILt
Q[p, 0] || GtQ[a, 0])
```

Rule 4853

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcCot[c*x])^p)/(d*(m + 1)), x] + Dist[(b*c*p
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcCot[c*x])^(p - 1))/(1 + c^2*x^2
), x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[p, 0] && (EqQ[p, 1] || Integ
erQ[m]) && NeQ[m, -1]
```

Rubi steps

$$\begin{aligned}\int x^m \cot^{-1}(ax)\,dx &= \frac{x^{1+m}\cot^{-1}(ax)}{1+m}+\frac{a\int \frac{x^{1+m}}{1+a^2x^2}\,dx}{1+m}\\ &= \frac{x^{1+m}\cot^{-1}(ax)}{1+m}+\frac{ax^{2+m}\,{}_2F_1\left(1,\frac{2+m}{2};\frac{4+m}{2};-a^2x^2\right)}{2+3m+m^2}\end{aligned}$$

Mathematica [A] time = 0.02, size = 52, normalized size = 0.91

$$\frac{x^{m+1}\left(ax\,{}_2F_1\left(1,\frac{m}{2}+1;\frac{m}{2}+2;-a^2x^2\right)+(m+2)\cot^{-1}(ax)\right)}{(m+1)(m+2)}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^m*ArcCot[a*x],x]
```

```
[Out] (x^(1 + m)*((2 + m)*ArcCot[a*x] + a*x*Hypergeometric2F1[1, 1 + m/2, 2 + m/2
, -(a^2*x^2)]))/((1 + m)*(2 + m))
```

fricas [F] time = 0.62, size = 0, normalized size = 0.00

$$\text{integral}\left(x^{m} \operatorname{arccot}\left(ax\right), x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*arccot(a*x),x, algorithm="fricas")
```

```
[Out] integral(x^m*arccot(a*x), x)
```

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

$$\int x^{m} \operatorname{arccot}\left(ax\right) dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*arccot(a*x),x, algorithm="giac")
```

```
[Out] integrate(x^m*arccot(a*x), x)
```

maple [F] time = 1.66, size = 0, normalized size = 0.00

$$\int x^{m} \operatorname{arccot}\left(ax\right) dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m*arccot(a*x),x)
```

```
[Out] int(x^m*arccot(a*x),x)
```

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

$$\frac{xx^{m} \arctan\left(1, ax\right) + \left(am + a\right) \int \frac{xx^{m}}{\left(a^{2}m + a^{2}\right)x^{2} + m + 1}\, dx}{m + 1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*arccot(a*x),x, algorithm="maxima")
```

```
[Out] (x*x^m*arctan2(1, a*x) + (a*m + a)*integrate(x*x^m/((a^2*m + a^2)*x^2 + m +
 1), x))/(m + 1)
```

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

$$\int x^{m} \operatorname{acot}\left(a\,x\right) dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m*acot(a*x),x)
```

```
[Out] int(x^m*acot(a*x), x)
```

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

$$\int x^{m} \operatorname{acot}\left(ax\right) dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**m*acot(a*x),x)
```

```
[Out] Integral(x**m*acot(a*x), x)
```

3.37 $\int \frac{x^4 \cot^{-1}(x)}{1+x^2} \, dx$

Optimal. Leaf size=40

$$\frac{1}{3}x^3 \cot^{-1}(x) + \frac{x^2}{6} - \frac{2}{3}\log\left(x^2+1\right) - x\cot^{-1}(x) - \frac{1}{2}\cot^{-1}(x)^2$$

```
[Out] 1/6*x^2-x*arccot(x)+1/3*x^3*arccot(x)-1/2*arccot(x)^2-2/3*ln(x^2+1)
```

Rubi [A] time = 0.10, antiderivative size = 40, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 7, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.538, Rules used = {4917, 4853, 266, 43, 4847, 260, 4885}

$$\frac{x^2}{6} - \frac{2}{3}\log\left(x^2+1\right) + \frac{1}{3}x^3\cot^{-1}(x) - x\cot^{-1}(x) - \frac{1}{2}\cot^{-1}(x)^2$$

Antiderivative was successfully verified.

```
[In] Int[(x^4*ArcCot[x])/(1 + x^2),x]
```

```
[Out] x^2/6 - x*ArcCot[x] + (x^3*ArcCot[x])/3 - ArcCot[x]^2/2 - (2*Log[1 + x^2])/
3
```

Rule 43

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

Rule 260

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

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 4847

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b*Ar
cCot[c*x])^p, x] + Dist[b*c*p, Int[(x*(a + b*ArcCot[c*x])^(p - 1))/(1 + c^2
*x^2), x], x] /; FreeQ[{a, b, c}, x] && IGtQ[p, 0]
```

Rule 4853

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcCot[c*x])^p)/(d*(m + 1)), x] + Dist[(b*c*p
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcCot[c*x])^(p - 1))/(1 + c^2*x^2
), x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[p, 0] && (EqQ[p, 1] || Integ
erQ[m]) && NeQ[m, -1]
```

Rule 4885

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)^2), x_Symbo
l] :> -Simp[(a + b*ArcCot[c*x])^(p + 1)/(b*c*d*(p + 1)), x] /; FreeQ[{a, b,
 c, d, e, p}, x] && EqQ[e, c^2*d] && NeQ[p, -1]
```

Rule 4917

```
Int[(((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)*((f_.)*(x_))^(m_))/((d_) + (e
_.)*(x_)^2), x_Symbol] :> Dist[f^2/e, Int[(f*x)^(m - 2)*(a + b*ArcCot[c*x])
^p, x], x] - Dist[(d*f^2)/e, Int[((f*x)^(m - 2)*(a + b*ArcCot[c*x])^p)/(d +
 e*x^2), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && GtQ[p, 0] && GtQ[m, 1]
```

Rubi steps

$$\begin{aligned}
\int \frac{x^4 \cot^{-1}(x)}{1+x^2}\,dx &= \int x^2 \cot^{-1}(x)\,dx - \int \frac{x^2 \cot^{-1}(x)}{1+x^2}\,dx \\
&= \frac{1}{3}x^3 \cot^{-1}(x) + \frac{1}{3}\int \frac{x^3}{1+x^2}\,dx - \int \cot^{-1}(x)\,dx + \int \frac{\cot^{-1}(x)}{1+x^2}\,dx \\
&= -x\cot^{-1}(x) + \frac{1}{3}x^3\cot^{-1}(x) - \frac{1}{2}\cot^{-1}(x)^2 + \frac{1}{6}\,\text{Subst}\left(\int \frac{x}{1+x}\,dx, x, x^2\right) - \int \frac{x}{1+x^2}\,dx \\
&= -x\cot^{-1}(x) + \frac{1}{3}x^3\cot^{-1}(x) - \frac{1}{2}\cot^{-1}(x)^2 - \frac{1}{2}\log\left(1+x^2\right) + \frac{1}{6}\,\text{Subst}\left(\int \left(1+\frac{1}{-1-x}\right) dx\right. \\
&= \frac{x^2}{6} - x\cot^{-1}(x) + \frac{1}{3}x^3\cot^{-1}(x) - \frac{1}{2}\cot^{-1}(x)^2 - \frac{2}{3}\log\left(1+x^2\right)
\end{aligned}$$

Mathematica [A] time = 0.03, size = 32, normalized size = 0.80

$$\frac{1}{6}\left(x^2 - 4\log\left(x^2+1\right) + 2\left(x^2-3\right)x\cot^{-1}(x) - 3\cot^{-1}(x)^2\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^4*ArcCot[x])/(1 + x^2),x]
[Out] (x^2 + 2*x*(-3 + x^2)*ArcCot[x] - 3*ArcCot[x]^2 - 4*Log[1 + x^2])/6
```

fricas [A] time = 0.61, size = 31, normalized size = 0.78

$$\frac{1}{6}x^2 + \frac{1}{3}\left(x^3 - 3x\right)\operatorname{arccot}(x) - \frac{1}{2}\operatorname{arccot}(x)^2 - \frac{2}{3}\log\left(x^2+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*arccot(x)/(x^2+1),x, algorithm="fricas")
[Out] 1/6*x^2 + 1/3*(x^3 - 3*x)*arccot(x) - 1/2*arccot(x)^2 - 2/3*log(x^2 + 1)
```

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

$$\int \frac{x^4 \operatorname{arccot}(x)}{x^2+1}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*arccot(x)/(x^2+1),x, algorithm="giac")
[Out] integrate(x^4*arccot(x)/(x^2 + 1), x)
```

maple [A] time = 0.05, size = 38, normalized size = 0.95

$$\frac{x^3\operatorname{arccot}(x)}{3} - x\operatorname{arccot}(x) + \operatorname{arccot}(x)\arctan(x) + \frac{x^2}{6} - \frac{2\ln\left(x^2+1\right)}{3} + \frac{\arctan(x)^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*arccot(x)/(x^2+1),x)
```

```
[Out] 1/3*x^3*arccot(x)-x*arccot(x)+arccot(x)*arctan(x)+1/6*x^2-2/3*ln(x^2+1)+1/2
*arctan(x)^2
```

maxima [A] time = 0.42, size = 35, normalized size = 0.88

$$\frac{1}{6}\,x^2+\frac{1}{3}\,\left(x^3-3\,x+3\,\arctan(x)\right)\mathrm{arccot}(x)+\frac{1}{2}\,\arctan(x)^2-\frac{2}{3}\,\log\left(x^2+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*arccot(x)/(x^2+1),x, algorithm="maxima")
```

```
[Out] 1/6*x^2 + 1/3*(x^3 - 3*x + 3*arctan(x))*arccot(x) + 1/2*arctan(x)^2 - 2/3*l
og(x^2 + 1)
```

mupad [B] time = 0.73, size = 32, normalized size = 0.80

$$\frac{x^3\,\mathrm{acot}(x)}{3}-\frac{2\,\ln\left(x^2+1\right)}{3}-\frac{\mathrm{acot}(x)^2}{2}-x\,\mathrm{acot}(x)+\frac{x^2}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^4*acot(x))/(x^2 + 1),x)
```

```
[Out] (x^3*acot(x))/3 - (2*log(x^2 + 1))/3 - acot(x)^2/2 - x*acot(x) + x^2/6
```

sympy [A] time = 0.51, size = 34, normalized size = 0.85

$$\frac{x^3\,\mathrm{acot}\,(x)}{3}+\frac{x^2}{6}-x\,\mathrm{acot}\,(x)-\frac{2\log\left(x^2+1\right)}{3}-\frac{\mathrm{acot}^2\,(x)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*acot(x)/(x**2+1),x)
```

```
[Out] x**3*acot(x)/3 + x**2/6 - x*acot(x) - 2*log(x**2 + 1)/3 - acot(x)**2/2
```

3.38 $\int \frac{x^3 \cot^{-1}(x)}{1+x^2} \, dx$

Optimal. Leaf size=67

$$-\frac{1}{2} i \text{Li}_2\left(1-\frac{2}{ix+1}\right)+\frac{1}{2} x^2 \cot^{-1}(x)+\frac{x}{2}-\frac{1}{2} \tan^{-1}(x)-\frac{1}{2} i \cot^{-1}(x)^2+\log \left(\frac{2}{1+ix}\right) \cot^{-1}(x)$$

```
[Out] 1/2*x+1/2*x^2*arccot(x)-1/2*I*arccot(x)^2-1/2*arctan(x)+arccot(x)*ln(2/(1+I
*x))-1/2*I*polylog(2,1-2/(1+I*x))
```

Rubi [A] time = 0.09, antiderivative size = 67, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 8, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.615, Rules used = {4917, 4853, 321, 203, 4921, 4855, 2402, 2315}

$$-\frac{1}{2} i \text{PolyLog}\left(2,1-\frac{2}{1+ix}\right)+\frac{1}{2} x^2 \cot^{-1}(x)+\frac{x}{2}-\frac{1}{2} \tan^{-1}(x)-\frac{1}{2} i \cot^{-1}(x)^2+\log \left(\frac{2}{1+ix}\right) \cot^{-1}(x)$$

Antiderivative was successfully verified.

```
[In] Int[(x^3*ArcCot[x])/(1 + x^2),x]
```

```
[Out] x/2 + (x^2*ArcCot[x])/2 - (I/2)*ArcCot[x]^2 - ArcTan[x]/2 + ArcCot[x]*Log[2
/(1 + I*x)] - (I/2)*PolyLog[2, 1 - 2/(1 + I*x)]
```

Rule 203

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

Rule 321

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

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2402

```
Int[Log[(c_.)/((d_) + (e_.)*(x_))]/((f_) + (g_.)*(x_)^2), x_Symbol] :> -Dis
t[e/g, Subst[Int[Log[2*d*x]/(1 - 2*d*x), x], x, 1/(d + e*x)], x] /; FreeQ[{
c, d, e, f, g}, x] && EqQ[c, 2*d] && EqQ[e^2*f + d^2*g, 0]
```

Rule 4853

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcCot[c*x])^p)/(d*(m + 1)), x] + Dist[(b*c*p
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcCot[c*x])^(p - 1))/(1 + c^2*x^2
), x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[p, 0] && (EqQ[p, 1] || Integ
erQ[m]) && NeQ[m, -1]
```

Rule 4855

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symbol]
 :> -Simp[((a + b*ArcCot[c*x])^p*Log[2/(1 + (e*x)/d)])/e, x] - Dist[(b*c*p)
/e, Int[((a + b*ArcCot[c*x])^(p - 1)*Log[2/(1 + (e*x)/d)])/(1 + c^2*x^2), x
], x] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[p, 0] && EqQ[c^2*d^2 + e^2, 0]
```

Rule 4917

```
Int[(((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)*((f_.)*(x_))^(m_))/((d_) + (e
_.)*(x_)^2), x_Symbol] :> Dist[f^2/e, Int[(f*x)^(m - 2)*(a + b*ArcCot[c*x])
^p, x], x] - Dist[(d*f^2)/e, Int[((f*x)^(m - 2)*(a + b*ArcCot[c*x])^p)/(d +
 e*x^2), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && GtQ[p, 0] && GtQ[m, 1]
```

Rule 4921

```
Int[(((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)*(x_))/((d_) + (e_.)*(x_)^2),
x_Symbol] :> Simp[(I*(a + b*ArcCot[c*x])^(p + 1))/(b*e*(p + 1)), x] - Dist[
1/(c*d), Int[(a + b*ArcCot[c*x])^p/(I - c*x), x], x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[e, c^2*d] && IGtQ[p, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{x^3\cot^{-1}(x)}{1+x^2}\,dx &= \int x\cot^{-1}(x)\,dx - \int \frac{x\cot^{-1}(x)}{1+x^2}\,dx \\
&= \frac{1}{2}x^2\cot^{-1}(x) - \frac{1}{2}i\cot^{-1}(x)^2 + \frac{1}{2}\int \frac{x^2}{1+x^2}\,dx + \int \frac{\cot^{-1}(x)}{i-x}\,dx \\
&= \frac{x}{2} + \frac{1}{2}x^2\cot^{-1}(x) - \frac{1}{2}i\cot^{-1}(x)^2 + \cot^{-1}(x)\log\left(\frac{2}{1+ix}\right) - \frac{1}{2}\int \frac{1}{1+x^2}\,dx + \int \frac{\log\left(\frac{2}{1+ix}\right)}{1+x^2}\,dx \\
&= \frac{x}{2} + \frac{1}{2}x^2\cot^{-1}(x) - \frac{1}{2}i\cot^{-1}(x)^2 - \frac{1}{2}\tan^{-1}(x) + \cot^{-1}(x)\log\left(\frac{2}{1+ix}\right) - i\,\mathrm{Subst}\left(\int \frac{\log(2x)}{1-2x}\, \right. \\
&= \frac{x}{2} + \frac{1}{2}x^2\cot^{-1}(x) - \frac{1}{2}i\cot^{-1}(x)^2 - \frac{1}{2}\tan^{-1}(x) + \cot^{-1}(x)\log\left(\frac{2}{1+ix}\right) - \frac{1}{2}i\mathrm{Li}_2\left(1-\frac{2}{1+ix}\right)
\end{aligned}
$$

Mathematica [B] time = 0.07, size = 241, normalized size = 3.60

$$
-\frac{1}{4}i\mathrm{Li}_2\left(-\frac{1}{2}i(i-x)\right)+\frac{1}{4}i\mathrm{Li}_2\left(-\frac{1}{2}i(x+i)\right)+\frac{1}{2}x^2\cot^{-1}(x)+\frac{x}{2}+\frac{1}{8}i\log^2(-x+i)-\frac{1}{8}i\log^2(x+i)-\frac{1}{4}i\log(-x+i)\log\left(-\frac{-x}{}\right.
$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(x^3*ArcCot[x])/(1 + x^2),x]
```

```
[Out] x/2 + (x^2*ArcCot[x])/2 - ArcTan[x]/2 + (I/8)*Log[I - x]^2 - (I/4)*Log[I -
x]*Log[-((I - x)/x)] - (I/4)*Log[I - x]*Log[(-1/2*I)*(I + x)] + (I/4)*Log[(
-1/2*I)*(I - x)]*Log[I + x] - (I/4)*Log[-((I - x)/x)]*Log[I + x] - (I/8)*Lo
g[I + x]^2 + (I/4)*Log[I - x]*Log[(I + x)/x] + (I/4)*Log[I + x]*Log[(I + x)
/x] - (I/4)*PolyLog[2, (-1/2*I)*(I - x)] + (I/4)*PolyLog[2, (-1/2*I)*(I + x
)]
```

fricas [F] time = 0.39, size = 0, normalized size = 0.00

$$
\mathrm{integral}\left(\frac{x^3\operatorname{arccot}(x)}{x^2+1}, x\right)
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*arccot(x)/(x^2+1),x, algorithm="fricas")
```

```
[Out] integral(x^3*arccot(x)/(x^2 + 1), x)
```

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

$$\int \frac{x^3 \operatorname{arccot}(x)}{x^2+1}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*arccot(x)/(x^2+1),x, algorithm="giac")
```

```
[Out] integrate(x^3*arccot(x)/(x^2 + 1), x)
```

maple [B] time = 0.18, size = 128, normalized size = 1.91

$$\frac{x^2\operatorname{arccot}(x)}{2}-\frac{\operatorname{arccot}(x)\ln\left(x^2+1\right)}{2}+\frac{x}{2}-\frac{\arctan(x)}{2}+\frac{i\ln(x-i)\ln\left(x^2+1\right)}{4}-\frac{i\ln(x-i)^2}{8}-\frac{i\operatorname{dilog}\left(-\frac{i(x+i)}{2}\right)}{4}-\frac{i\ln(\cdots}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*arccot(x)/(x^2+1),x)
```

```
[Out] 1/2*x^2*arccot(x)-1/2*arccot(x)*ln(x^2+1)+1/2*x-1/2*arctan(x)+1/4*I*ln(x-I)
*ln(x^2+1)-1/8*I*ln(x-I)^2-1/4*I*dilog(-1/2*I*(x+I))-1/4*I*ln(x-I)*ln(-1/2*
I*(x+I))-1/4*I*ln(x+I)*ln(x^2+1)+1/8*I*ln(x+I)^2+1/4*I*dilog(1/2*I*(x-I))+1
/4*I*ln(x+I)*ln(1/2*I*(x-I))
```

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

$$\int \frac{x^3 \operatorname{arccot}(x)}{x^2+1}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*arccot(x)/(x^2+1),x, algorithm="maxima")
```

```
[Out] integrate(x^3*arccot(x)/(x^2 + 1), x)
```

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

$$\int \frac{x^3 \operatorname{acot}(x)}{x^2+1}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^3*acot(x))/(x^2 + 1),x)
```

```
[Out] int((x^3*acot(x))/(x^2 + 1), x)
```

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

$$\int \frac{x^3 \operatorname{acot}(x)}{x^2+1}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*acot(x)/(x**2+1),x)
```

```
[Out] Integral(x**3*acot(x)/(x**2 + 1), x)
```

3.39 $\int \frac{x^2 \cot^{-1}(x)}{1+x^2} \, dx$

Optimal. Leaf size=23

$$\frac{1}{2}\log\left(x^2+1\right)+\frac{1}{2}\cot^{-1}(x)^2+x\cot^{-1}(x)$$

```
[Out] x*arccot(x)+1/2*arccot(x)^2+1/2*ln(x^2+1)
```

Rubi [A] time = 0.05, antiderivative size = 23, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.308, Rules used = {4917, 4847, 260, 4885}

$$\frac{1}{2}\log\left(x^2+1\right)+\frac{1}{2}\cot^{-1}(x)^2+x\cot^{-1}(x)$$

Antiderivative was successfully verified.

```
[In] Int[(x^2*ArcCot[x])/(1 + x^2),x]
```

```
[Out] x*ArcCot[x] + ArcCot[x]^2/2 + Log[1 + x^2]/2
```

Rule 260

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

Rule 4847

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b*Ar
cCot[c*x])^p, x] + Dist[b*c*p, Int[(x*(a + b*ArcCot[c*x])^(p - 1))/(1 + c^2
*x^2), x], x] /; FreeQ[{a, b, c}, x] && IGtQ[p, 0]
```

Rule 4885

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)^2), x_Symbo
l] :> -Simp[(a + b*ArcCot[c*x])^(p + 1)/(b*c*d*(p + 1)), x] /; FreeQ[{a, b,
 c, d, e, p}, x] && EqQ[e, c^2*d] && NeQ[p, -1]
```

Rule 4917

```
Int[(((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)*((f_.)*(x_))^(m_))/((d_) + (e
_.)*(x_)^2), x_Symbol] :> Dist[f^2/e, Int[(f*x)^(m - 2)*(a + b*ArcCot[c*x])
^p, x], x] - Dist[(d*f^2)/e, Int[((f*x)^(m - 2)*(a + b*ArcCot[c*x])^p)/(d +
 e*x^2), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && GtQ[p, 0] && GtQ[m, 1]
```

Rubi steps

$$\begin{aligned}
\int \frac{x^2 \cot^{-1}(x)}{1+x^2} \, dx &= \int \cot^{-1}(x) \, dx-\int \frac{\cot^{-1}(x)}{1+x^2} \, dx\\
&= x \cot^{-1}(x)+\frac{1}{2} \cot^{-1}(x)^2+\int \frac{x}{1+x^2} \, dx\\
&= x \cot^{-1}(x)+\frac{1}{2} \cot^{-1}(x)^2+\frac{1}{2} \log \left(1+x^2\right)
\end{aligned}$$

Mathematica [A] time = 0.02, size = 23, normalized size = 1.00

$$\frac{1}{2}\log\left(x^2+1\right)+\frac{1}{2}\cot^{-1}(x)^2+x\cot^{-1}(x)$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^2*ArcCot[x])/(1 + x^2),x]
[Out] x*ArcCot[x] + ArcCot[x]^2/2 + Log[1 + x^2]/2
```

fricas [A] time = 0.56, size = 19, normalized size = 0.83

$$x \operatorname{arccot}(x) + \frac{1}{2} \operatorname{arccot}(x)^2 + \frac{1}{2} \log\left(x^2 + 1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*arccot(x)/(x^2+1),x, algorithm="fricas")
[Out] x*arccot(x) + 1/2*arccot(x)^2 + 1/2*log(x^2 + 1)
```

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

$$\int \frac{x^2 \operatorname{arccot}(x)}{x^2 + 1} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*arccot(x)/(x^2+1),x, algorithm="giac")
[Out] integrate(x^2*arccot(x)/(x^2 + 1), x)
```

maple [A] time = 0.05, size = 26, normalized size = 1.13

$$-\operatorname{arccot}(x)\arctan(x) + x \operatorname{arccot}(x) + \frac{\ln\left(x^2 + 1\right)}{2} - \frac{\arctan(x)^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*arccot(x)/(x^2+1),x)
[Out] -arccot(x)*arctan(x)+x*arccot(x)+1/2*ln(x^2+1)-1/2*arctan(x)^2
```

maxima [A] time = 0.43, size = 24, normalized size = 1.04

$$(x - \arctan(x)) \operatorname{arccot}(x) - \frac{1}{2} \arctan(x)^2 + \frac{1}{2} \log\left(x^2 + 1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*arccot(x)/(x^2+1),x, algorithm="maxima")
[Out] (x - arctan(x))*arccot(x) - 1/2*arctan(x)^2 + 1/2*log(x^2 + 1)
```

mupad [B] time = 0.64, size = 19, normalized size = 0.83

$$\frac{\operatorname{acot}(x)^2}{2} + x \operatorname{acot}(x) + \frac{\ln\left(x^2 + 1\right)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

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

sympy [A] time = 0.30, size = 19, normalized size = 0.83

$$x \operatorname{acot}{\left(x \right)} + \frac{\log\left(x^2 + 1\right)}{2} + \frac{\operatorname{acot}^2{\left(x \right)}}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*acot(x)/(x**2+1),x)
```

```
[Out] x*acot(x) + log(x**2 + 1)/2 + acot(x)**2/2
```

3.40 $\int \frac{x \cot^{-1}(x)}{1+x^2} \, dx$

Optimal. Leaf size=48

$$\frac{1}{2} i \text{Li}_2\left(1-\frac{2}{ix+1}\right)+\frac{1}{2} i \cot^{-1}(x)^2-\log \left(\frac{2}{1+ix}\right) \cot^{-1}(x)$$

```
[Out] 1/2*I*arccot(x)^2-arccot(x)*ln(2/(1+I*x))+1/2*I*polylog(2,1-2/(1+I*x))
```

Rubi [A] time = 0.05, antiderivative size = 48, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.364, Rules used = {4921, 4855, 2402, 2315}

$$\frac{1}{2} i \text{PolyLog}\left(2,1-\frac{2}{1+ix}\right)+\frac{1}{2} i \cot^{-1}(x)^2-\log \left(\frac{2}{1+ix}\right) \cot^{-1}(x)$$

Antiderivative was successfully verified.

```
[In] Int[(x*ArcCot[x])/(1 + x^2),x]
```

```
[Out] (I/2)*ArcCot[x]^2 - ArcCot[x]*Log[2/(1 + I*x)] + (I/2)*PolyLog[2, 1 - 2/(1
+ I*x)]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2402

```
Int[Log[(c_.)/((d_) + (e_.)*(x_))]/((f_) + (g_.)*(x_)^2), x_Symbol] :> -Dis
t[e/g, Subst[Int[Log[2*d*x]/(1 - 2*d*x), x], x, 1/(d + e*x)], x] /; FreeQ[{
c, d, e, f, g}, x] && EqQ[c, 2*d] && EqQ[e^2*f + d^2*g, 0]
```

Rule 4855

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symbol]
 :> -Simp[((a + b*ArcCot[c*x])^p*Log[2/(1 + (e*x)/d)])/e, x] - Dist[(b*c*p)
/e, Int[((a + b*ArcCot[c*x])^(p - 1)*Log[2/(1 + (e*x)/d)])/(1 + c^2*x^2), x
], x] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[p, 0] && EqQ[c^2*d^2 + e^2, 0]
```

Rule 4921

```
Int[(((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)*(x_))/((d_) + (e_.)*(x_)^2),
x_Symbol] :> Simp[(I*(a + b*ArcCot[c*x])^(p + 1))/(b*e*(p + 1)), x] - Dist[
1/(c*d), Int[(a + b*ArcCot[c*x])^p/(I - c*x), x], x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[e, c^2*d] && IGtQ[p, 0]
```

Rubi steps

$$\int \frac{x\cot^{-1}(x)}{1+x^2}\,dx = \frac{1}{2}i\cot^{-1}(x)^2 - \int \frac{\cot^{-1}(x)}{i-x}\,dx$$
$$= \frac{1}{2}i\cot^{-1}(x)^2 - \cot^{-1}(x)\log\left(\frac{2}{1+ix}\right) - \int \frac{\log\left(\frac{2}{1+ix}\right)}{1+x^2}\,dx$$
$$= \frac{1}{2}i\cot^{-1}(x)^2 - \cot^{-1}(x)\log\left(\frac{2}{1+ix}\right) + i\,\text{Subst}\left(\int \frac{\log(2x)}{1-2x}\,dx, x, \frac{1}{1+ix}\right)$$
$$= \frac{1}{2}i\cot^{-1}(x)^2 - \cot^{-1}(x)\log\left(\frac{2}{1+ix}\right) + \frac{1}{2}i\text{Li}_2\left(1-\frac{2}{1+ix}\right)$$

Mathematica [B] time = 0.05, size = 221, normalized size = 4.60

$$\frac{1}{4}i\text{Li}_2\left(-\frac{1}{2}i(i-x)\right)-\frac{1}{4}i\text{Li}_2\left(-\frac{1}{2}i(x+i)\right)-\frac{1}{8}i\log^2(-x+i)+\frac{1}{8}i\log^2(x+i)+\frac{1}{4}i\log\left(-\frac{-x+i}{x}\right)\log(-x+i)+\frac{1}{4}i\log\left(-\frac{1}{2}i(x\right.$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(x*ArcCot[x])/(1 + x^2),x]
```

```
[Out] (-1/8*I)*Log[I - x]^2 + (I/4)*Log[I - x]*Log[-((I - x)/x)] + (I/4)*Log[I -
x]*Log[(-1/2*I)*(I + x)] - (I/4)*Log[(-1/2*I)*(I - x)]*Log[I + x] + (I/4)*L
og[-((I - x)/x)]*Log[I + x] + (I/8)*Log[I + x]^2 - (I/4)*Log[I - x]*Log[(I
+ x)/x] - (I/4)*Log[I + x]*Log[(I + x)/x] + (I/4)*PolyLog[2, (-1/2*I)*(I -
x)] - (I/4)*PolyLog[2, (-1/2*I)*(I + x)]
```

fricas [F] time = 0.63, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{x\,\text{arccot}(x)}{x^2+1}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*arccot(x)/(x^2+1),x, algorithm="fricas")
```

```
[Out] integral(x*arccot(x)/(x^2 + 1), x)
```

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

$$\int \frac{x\,\text{arccot}(x)}{x^2+1}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*arccot(x)/(x^2+1),x, algorithm="giac")
```

```
[Out] integrate(x*arccot(x)/(x^2 + 1), x)
```

maple [B] time = 0.13, size = 114, normalized size = 2.38

$$\frac{\text{arccot}(x)\ln\left(x^2+1\right)}{2}-\frac{i\ln(x-i)\ln\left(x^2+1\right)}{4}+\frac{i\ln(x-i)^2}{8}+\frac{i\,\text{dilog}\left(-\frac{i(x+i)}{2}\right)}{4}+\frac{i\ln(x-i)\ln\left(-\frac{i(x+i)}{2}\right)}{4}+\frac{i\ln(x+i)\ln}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*arccot(x)/(x^2+1),x)
```

```
[Out] 1/2*arccot(x)*ln(x^2+1)-1/4*I*ln(x-I)*ln(x^2+1)+1/8*I*ln(x-I)^2+1/4*I*dilog
(-1/2*I*(x+I))+1/4*I*ln(x-I)*ln(-1/2*I*(x+I))+1/4*I*ln(x+I)*ln(x^2+1)-1/8*I
*ln(x+I)^2-1/4*I*dilog(1/2*I*(x-I))-1/4*I*ln(x+I)*ln(1/2*I*(x-I))
```

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

$$\int \frac{x \operatorname{arccot}(x)}{x^2 + 1} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*arccot(x)/(x^2+1),x, algorithm="maxima")
```

```
[Out] integrate(x*arccot(x)/(x^2 + 1), x)
```

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

$$\int \frac{x \operatorname{acot}(x)}{x^2 + 1} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*acot(x))/(x^2 + 1),x)
```

```
[Out] int((x*acot(x))/(x^2 + 1), x)
```

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

$$\int \frac{x \operatorname{acot}(x)}{x^2 + 1} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*acot(x)/(x**2+1),x)
```

```
[Out] Integral(x*acot(x)/(x**2 + 1), x)
```

3.41 $\int \frac{\cot^{-1}(x)}{1+x^2} \, dx$

Optimal. Leaf size=8

$$-\frac{1}{2}\cot^{-1}(x)^2$$

```
[Out] -1/2*arccot(x)^2
```

Rubi [A] time = 0.01, antiderivative size = 8, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.100, Rules used = {4885}

$$-\frac{1}{2}\cot^{-1}(x)^2$$

Antiderivative was successfully verified.

```
[In] Int[ArcCot[x]/(1 + x^2),x]
```

```
[Out] -ArcCot[x]^2/2
```

Rule 4885

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)^2), x_Symbo
l] :> -Simp[(a + b*ArcCot[c*x])^(p + 1)/(b*c*d*(p + 1)), x] /; FreeQ[{a, b,
 c, d, e, p}, x] && EqQ[e, c^2*d] && NeQ[p, -1]
```

Rubi steps

$$\int \frac{\cot^{-1}(x)}{1+x^2} \, dx = -\frac{1}{2}\cot^{-1}(x)^2$$

Mathematica [A] time = 0.00, size = 8, normalized size = 1.00

$$-\frac{1}{2}\cot^{-1}(x)^2$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcCot[x]/(1 + x^2),x]
```

```
[Out] -1/2*ArcCot[x]^2
```

fricas [A] time = 0.64, size = 6, normalized size = 0.75

$$-\frac{1}{2}\operatorname{arccot}(x)^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(x)/(x^2+1),x, algorithm="fricas")
```

```
[Out] -1/2*arccot(x)^2
```

giac [A] time = 0.11, size = 8, normalized size = 1.00

$$-\frac{1}{2}\arctan\left(\frac{1}{x}\right)^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(x)/(x^2+1),x, algorithm="giac")
[Out] -1/2*arctan(1/x)^2
```

maple [A] time = 0.04, size = 7, normalized size = 0.88

$$-\frac{\operatorname{arccot}(x)^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arccot(x)/(x^2+1),x)
[Out] -1/2*arccot(x)^2
```

maxima [A] time = 0.31, size = 6, normalized size = 0.75

$$-\frac{1}{2}\operatorname{arccot}(x)^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(x)/(x^2+1),x, algorithm="maxima")
[Out] -1/2*arccot(x)^2
```

mupad [B] time = 0.62, size = 6, normalized size = 0.75

$$-\frac{\operatorname{acot}(x)^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(acot(x)/(x^2 + 1),x)
[Out] -acot(x)^2/2
```

sympy [A] time = 0.88, size = 7, normalized size = 0.88

$$-\frac{\operatorname{acot}^2(x)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(acot(x)/(x**2+1),x)
[Out] -acot(x)**2/2
```

3.42 $\int \frac{\cot^{-1}(x)}{x(1+x^2)}\,dx$

Optimal. Leaf size=49

$$\frac{1}{2}i\text{Li}_2\left(\frac{2}{1-ix}-1\right)+\frac{1}{2}i\cot^{-1}(x)^2+\log\left(2-\frac{2}{1-ix}\right)\cot^{-1}(x)$$

```
[Out] 1/2*I*arccot(x)^2+arccot(x)*ln(2-2/(1-I*x))+1/2*I*polylog(2,-1+2/(1-I*x))
```

Rubi [A] time = 0.07, antiderivative size = 49, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.231, Rules used = {4925, 4869, 2447}

$$\frac{1}{2}i\text{PolyLog}\left(2,-1+\frac{2}{1-ix}\right)+\frac{1}{2}i\cot^{-1}(x)^2+\log\left(2-\frac{2}{1-ix}\right)\cot^{-1}(x)$$

Antiderivative was successfully verified.

```
[In] Int[ArcCot[x]/(x*(1 + x^2)),x]
```

```
[Out] (I/2)*ArcCot[x]^2 + ArcCot[x]*Log[2 - 2/(1 - I*x)] + (I/2)*PolyLog[2, -1 +
2/(1 - I*x)]
```

Rule 2447

```
Int[Log[u_]*(Pq_)^(m_.), x_Symbol] :> With[{C = FullSimplify[(Pq^m*(1 - u))
/D[u, x]]}, Simp[C*PolyLog[2, 1 - u], x] /; FreeQ[C, x]] /; IntegerQ[m] &&
PolyQ[Pq, x] && RationalFunctionQ[u, x] && LeQ[RationalFunctionExponents[u,
 x][[2]], Expon[Pq, x]]
```

Rule 4869

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_))), x_
Symbol] :> Simp[((a + b*ArcCot[c*x])^p*Log[2 - 2/(1 + (e*x)/d)])/d, x] + Di
st[(b*c*p)/d, Int[((a + b*ArcCot[c*x])^(p - 1)*Log[2 - 2/(1 + (e*x)/d)])/(1
 + c^2*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[p, 0] && EqQ[c^2*d
^2 + e^2, 0]
```

Rule 4925

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_)^2)),
x_Symbol] :> Simp[(I*(a + b*ArcCot[c*x])^(p + 1))/(b*d*(p + 1)), x] + Dist[
I/d, Int[(a + b*ArcCot[c*x])^p/(x*(I + c*x)), x], x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[e, c^2*d] && GtQ[p, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{\cot^{-1}(x)}{x\left(1+x^2\right)}\,dx &= \frac{1}{2}i\cot^{-1}(x)^2+i\int \frac{\cot^{-1}(x)}{x(i+x)}\,dx\\
&= \frac{1}{2}i\cot^{-1}(x)^2+\cot^{-1}(x)\log\left(2-\frac{2}{1-ix}\right)+\int \frac{\log\left(2-\frac{2}{1-ix}\right)}{1+x^2}\,dx\\
&= \frac{1}{2}i\cot^{-1}(x)^2+\cot^{-1}(x)\log\left(2-\frac{2}{1-ix}\right)+\frac{1}{2}i\text{Li}_2\left(-1+\frac{2}{1-ix}\right)
\end{aligned}$$

Mathematica [B] time = 0.06, size = 251, normalized size = 5.12

$$-\frac{1}{4}i\text{Li}_2\left(-\frac{1}{2}i(i-x)\right)-\frac{1}{2}i\text{Li}_2\left(-\frac{i}{x}\right)+\frac{1}{2}i\text{Li}_2\left(\frac{i}{x}\right)+\frac{1}{4}i\text{Li}_2\left(-\frac{1}{2}i(x+i)\right)+\frac{1}{8}i\log^2(-x+i)-\frac{1}{8}i\log^2(x+i)-\frac{1}{4}i\log\left(-\frac{-x}{x}\right.$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[ArcCot[x]/(x*(1 + x^2)),x]
```

```
[Out] (I/8)*Log[I - x]^2 - (I/4)*Log[I - x]*Log[-((I - x)/x)] - (I/4)*Log[I - x]*
Log[(-1/2*I)*(I + x)] + (I/4)*Log[(-1/2*I)*(I - x)]*Log[I + x] - (I/4)*Log[
-((I - x)/x)]*Log[I + x] - (I/8)*Log[I + x]^2 + (I/4)*Log[I - x]*Log[(I + x
)/x] + (I/4)*Log[I + x]*Log[(I + x)/x] - (I/4)*PolyLog[2, (-1/2*I)*(I - x)]
 - (I/2)*PolyLog[2, (-I)/x] + (I/2)*PolyLog[2, I/x] + (I/4)*PolyLog[2, (-1/
2*I)*(I + x)]
```

fricas [F] time = 0.40, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\text{arccot}(x)}{x^3+x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(x)/x/(x^2+1),x, algorithm="fricas")
```

```
[Out] integral(arccot(x)/(x^3 + x), x)
```

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

$$\int \frac{\text{arccot}(x)}{(x^2+1)x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(x)/x/(x^2+1),x, algorithm="giac")
```

```
[Out] integrate(arccot(x)/((x^2 + 1)*x), x)
```

maple [B] time = 0.14, size = 163, normalized size = 3.33

$$\text{arccot}(x)\ln(x)-\frac{\text{arccot}(x)\ln\left(x^2+1\right)}{2}-\frac{i\ln(x)\ln(ix+1)}{2}+\frac{i\ln(x)\ln(-ix+1)}{2}-\frac{i\,\text{dilog}(ix+1)}{2}+\frac{i\,\text{dilog}(-ix+}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arccot(x)/x/(x^2+1),x)
```

```
[Out] arccot(x)*ln(x)-1/2*arccot(x)*ln(x^2+1)-1/2*I*ln(x)*ln(1+I*x)+1/2*I*ln(x)*l
n(1-I*x)-1/2*I*dilog(1+I*x)+1/2*I*dilog(1-I*x)+1/4*I*ln(x-I)*ln(x^2+1)-1/8*
I*ln(x-I)^2-1/4*I*dilog(-1/2*I*(x+I))-1/4*I*ln(x-I)*ln(-1/2*I*(x+I))-1/4*I*
ln(x+I)*ln(x^2+1)+1/8*I*ln(x+I)^2+1/4*I*dilog(1/2*I*(x-I))+1/4*I*ln(x+I)*ln
(1/2*I*(x-I))
```

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

$$\int \frac{\text{arccot}(x)}{(x^2+1)x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(x)/x/(x^2+1),x, algorithm="maxima")
```

```
[Out] integrate(arccot(x)/((x^2 + 1)*x), x)
```

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

$$\int \frac{\operatorname{acot}(x)}{x\left(x^2+1\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(acot(x)/(x*(x^2 + 1)),x)
[Out] int(acot(x)/(x*(x^2 + 1)), x)
```

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

$$\int \frac{\operatorname{acot}(x)}{x\left(x^2+1\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(acot(x)/x/(x**2+1),x)
[Out] Integral(acot(x)/(x*(x**2 + 1)), x)
```

3.43 $\int \frac{\cot^{-1}(x)}{x^2(1+x^2)} dx$

Optimal. Leaf size=30

$$\frac{1}{2}\log\left(x^2+1\right)-\log(x)+\frac{1}{2}\cot^{-1}(x)^2-\frac{\cot^{-1}(x)}{x}$$

```
[Out] -arccot(x)/x+1/2*arccot(x)^2-ln(x)+1/2*ln(x^2+1)
```

Rubi [A] time = 0.06, antiderivative size = 30, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 7, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.538, Rules used = {4919, 4853, 266, 36, 29, 31, 4885}

$$\frac{1}{2}\log\left(x^2+1\right)-\log(x)+\frac{1}{2}\cot^{-1}(x)^2-\frac{\cot^{-1}(x)}{x}$$

Antiderivative was successfully verified.

```
[In] Int[ArcCot[x]/(x^2*(1 + x^2)),x]
```

```
[Out] -(ArcCot[x]/x) + ArcCot[x]^2/2 - Log[x] + Log[1 + x^2]/2
```

Rule 29

```
Int[(x_)^(-1), x_Symbol] :> Simp[Log[x], x]
```

Rule 31

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

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
 x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 4853

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcCot[c*x])^p)/(d*(m + 1)), x] + Dist[(b*c*p
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcCot[c*x])^(p - 1))/(1 + c^2*x^2
), x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[p, 0] && (EqQ[p, 1] || Integ
erQ[m]) && NeQ[m, -1]
```

Rule 4885

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)^2), x_Symbo
l] :> -Simp[(a + b*ArcCot[c*x])^(p + 1)/(b*c*d*(p + 1)), x] /; FreeQ[{a, b,
 c, d, e, p}, x] && EqQ[e, c^2*d] && NeQ[p, -1]
```

Rule 4919

```
Int[(((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)*((f_.)*(x_))^(m_))/((d_) + (e
_.)*(x_)^2), x_Symbol] :> Dist[1/d, Int[(f*x)^m*(a + b*ArcCot[c*x])^p, x],
x] - Dist[e/(d*f^2), Int[((f*x)^(m + 2)*(a + b*ArcCot[c*x])^p)/(d + e*x^2),
 x], x] /; FreeQ[{a, b, c, d, e, f}, x] && GtQ[p, 0] && LtQ[m, -1]
```

Rubi steps

$$
\begin{aligned}
\int \frac{\cot^{-1}(x)}{x^2\left(1+x^2\right)}\,dx &= \int \frac{\cot^{-1}(x)}{x^2}\,dx-\int \frac{\cot^{-1}(x)}{1+x^2}\,dx\\
&=-\frac{\cot^{-1}(x)}{x}+\frac{1}{2}\cot^{-1}(x)^2-\int \frac{1}{x\left(1+x^2\right)}\,dx\\
&=-\frac{\cot^{-1}(x)}{x}+\frac{1}{2}\cot^{-1}(x)^2-\frac{1}{2}\text{Subst}\left(\int \frac{1}{x(1+x)}\,dx,x,x^2\right)\\
&=-\frac{\cot^{-1}(x)}{x}+\frac{1}{2}\cot^{-1}(x)^2-\frac{1}{2}\text{Subst}\left(\int \frac{1}{x}\,dx,x,x^2\right)+\frac{1}{2}\text{Subst}\left(\int \frac{1}{1+x}\,dx,x,x^2\right)\\
&=-\frac{\cot^{-1}(x)}{x}+\frac{1}{2}\cot^{-1}(x)^2-\log(x)+\frac{1}{2}\log\left(1+x^2\right)
\end{aligned}
$$

Mathematica [A] time = 0.01, size = 30, normalized size = 1.00

$$\frac{1}{2}\log\left(x^2+1\right)-\log(x)+\frac{1}{2}\cot^{-1}(x)^2-\frac{\cot^{-1}(x)}{x}$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcCot[x]/(x^2*(1 + x^2)),x]
[Out] -(ArcCot[x]/x) + ArcCot[x]^2/2 - Log[x] + Log[1 + x^2]/2
```

fricas [A] time = 1.02, size = 29, normalized size = 0.97

$$\frac{x\,\mathrm{arccot}(x)^2+x\log\left(x^2+1\right)-2\,x\log(x)-2\,\mathrm{arccot}(x)}{2\,x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(x)/x^2/(x^2+1),x, algorithm="fricas")
[Out] 1/2*(x*arccot(x)^2 + x*log(x^2 + 1) - 2*x*log(x) - 2*arccot(x))/x
```

giac [A] time = 0.11, size = 26, normalized size = 0.87

$$\frac{1}{2}\arctan\left(\frac{1}{x}\right)^2-\frac{\arctan\left(\frac{1}{x}\right)}{x}+\frac{1}{2}\log\left(\frac{1}{x^2}+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(x)/x^2/(x^2+1),x, algorithm="giac")
[Out] 1/2*arctan(1/x)^2 - arctan(1/x)/x + 1/2*log(1/x^2 + 1)
```

maple [A] time = 0.05, size = 33, normalized size = 1.10

$$-\frac{\mathrm{arccot}(x)}{x}-\mathrm{arccot}(x)\arctan(x)-\ln(x)+\frac{\ln\left(x^2+1\right)}{2}-\frac{\arctan(x)^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arccot(x)/x^2/(x^2+1),x)
```

```
[Out] -arccot(x)/x-arccot(x)*arctan(x)-ln(x)+1/2*ln(x^2+1)-1/2*arctan(x)^2
```

maxima [A] time = 0.42, size = 29, normalized size = 0.97

$$-\left(\frac{1}{x} + \arctan(x)\right)\operatorname{arccot}(x) - \frac{1}{2}\arctan(x)^2 + \frac{1}{2}\log\left(x^2+1\right) - \log(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(x)/x^2/(x^2+1),x, algorithm="maxima")
```

```
[Out] -(1/x + arctan(x))*arccot(x) - 1/2*arctan(x)^2 + 1/2*log(x^2 + 1) - log(x)
```

mupad [B] time = 0.09, size = 26, normalized size = 0.87

$$\frac{\ln\left(x^2+1\right)}{2} - \ln(x) - \frac{\operatorname{acot}(x)}{x} + \frac{\operatorname{acot}(x)^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(acot(x)/(x^2*(x^2 + 1)),x)
```

```
[Out] log(x^2 + 1)/2 - log(x) - acot(x)/x + acot(x)^2/2
```

sympy [A] time = 0.43, size = 22, normalized size = 0.73

$$-\log(x) + \frac{\log\left(x^2+1\right)}{2} + \frac{\operatorname{acot}^2(x)}{2} - \frac{\operatorname{acot}(x)}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(acot(x)/x**2/(x**2+1),x)
```

```
[Out] -log(x) + log(x**2 + 1)/2 + acot(x)**2/2 - acot(x)/x
```

3.44 $\int \frac{\cot^{-1}(x)}{x^3(1+x^2)} dx$

Optimal. Leaf size=72

$$-\frac{1}{2}i\text{Li}_2\left(\frac{2}{1-ix}-1\right)-\frac{\cot^{-1}(x)}{2x^2}+\frac{1}{2x}+\frac{1}{2}\tan^{-1}(x)-\frac{1}{2}i\cot^{-1}(x)^2-\log\left(2-\frac{2}{1-ix}\right)\cot^{-1}(x)$$

```
[Out] 1/2/x-1/2*arccot(x)/x^2-1/2*I*arccot(x)^2+1/2*arctan(x)-arccot(x)*ln(2-2/(1
-I*x))-1/2*I*polylog(2,-1+2/(1-I*x))
```

Rubi [A] time = 0.11, antiderivative size = 72, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 7, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.538, Rules used = {4919, 4853, 325, 203, 4925, 4869, 2447}

$$-\frac{1}{2}i\text{PolyLog}\left(2,-1+\frac{2}{1-ix}\right)-\frac{\cot^{-1}(x)}{2x^2}+\frac{1}{2x}+\frac{1}{2}\tan^{-1}(x)-\frac{1}{2}i\cot^{-1}(x)^2-\log\left(2-\frac{2}{1-ix}\right)\cot^{-1}(x)$$

Antiderivative was successfully verified.

```
[In] Int[ArcCot[x]/(x^3*(1 + x^2)),x]
```

```
[Out] 1/(2*x) - ArcCot[x]/(2*x^2) - (I/2)*ArcCot[x]^2 + ArcTan[x]/2 - ArcCot[x]*L
og[2 - 2/(1 - I*x)] - (I/2)*PolyLog[2, -1 + 2/(1 - I*x)]
```

Rule 203

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

Rule 325

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

Rule 2447

```
Int[Log[u_]*(Pq_)^(m_.), x_Symbol] :> With[{C = FullSimplify[(Pq^m*(1 - u))
/D[u, x]]}, Simp[C*PolyLog[2, 1 - u], x] /; FreeQ[C, x]] /; IntegerQ[m] &&
PolyQ[Pq, x] && RationalFunctionQ[u, x] && LeQ[RationalFunctionExponents[u,
 x][[2]], Expon[Pq, x]]
```

Rule 4853

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcCot[c*x])^p)/(d*(m + 1)), x] + Dist[(b*c*p
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcCot[c*x])^(p - 1))/(1 + c^2*x^2
), x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[p, 0] && (EqQ[p, 1] || Integ
erQ[m]) && NeQ[m, -1]
```

Rule 4869

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_))), x_
Symbol] :> Simp[((a + b*ArcCot[c*x])^p*Log[2 - 2/(1 + (e*x)/d)])/d, x] + Di
st[(b*c*p)/d, Int[((a + b*ArcCot[c*x])^(p - 1)*Log[2 - 2/(1 + (e*x)/d)])/(1
 + c^2*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[p, 0] && EqQ[c^2*d
```

```
^2 + e^2, 0]
```

Rule 4919

```
Int[(((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)*((f_.)*(x_))^(m_))/((d_) + (e
_.)*(x_)^2), x_Symbol] :> Dist[1/d, Int[(f*x)^m*(a + b*ArcCot[c*x])^p, x],
x] - Dist[e/(d*f^2), Int[((f*x)^(m + 2)*(a + b*ArcCot[c*x])^p)/(d + e*x^2),
 x], x] /; FreeQ[{a, b, c, d, e, f}, x] && GtQ[p, 0] && LtQ[m, -1]
```

Rule 4925

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)/((x_)*((d_) + (e_.)*(x_)^2)),
x_Symbol] :> Simp[(I*(a + b*ArcCot[c*x])^(p + 1))/(b*d*(p + 1)), x] + Dist[
I/d, Int[(a + b*ArcCot[c*x])^p/(x*(I + c*x)), x], x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[e, c^2*d] && GtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{\cot^{-1}(x)}{x^3\left(1+x^2\right)}\,dx &= \int \frac{\cot^{-1}(x)}{x^3}\,dx-\int \frac{\cot^{-1}(x)}{x\left(1+x^2\right)}\,dx\\ &= -\frac{\cot^{-1}(x)}{2x^2}-\frac{1}{2}i\cot^{-1}(x)^2-i\int \frac{\cot^{-1}(x)}{x(i+x)}\,dx-\frac{1}{2}\int \frac{1}{x^2\left(1+x^2\right)}\,dx\\ &= \frac{1}{2x}-\frac{\cot^{-1}(x)}{2x^2}-\frac{1}{2}i\cot^{-1}(x)^2-\cot^{-1}(x)\log\left(2-\frac{2}{1-ix}\right)+\frac{1}{2}\int \frac{1}{1+x^2}\,dx-\int \frac{\log\left(2-\frac{}{1}\right.}{1+x^2}\\ &= \frac{1}{2x}-\frac{\cot^{-1}(x)}{2x^2}-\frac{1}{2}i\cot^{-1}(x)^2+\frac{1}{2}\tan^{-1}(x)-\cot^{-1}(x)\log\left(2-\frac{2}{1-ix}\right)-\frac{1}{2}i\mathrm{Li}_2\left(-1+\frac{2}{1-}\right.\end{aligned}$$

Mathematica [C] time = 0.07, size = 280, normalized size = 3.89

$$\frac{{}_2F_1\left(-\frac{1}{2},1;\frac{1}{2};-x^2\right)}{2x}+\frac{1}{4}i\mathrm{Li}_2\left(-\frac{1}{2}i(i-x)\right)+\frac{1}{2}i\mathrm{Li}_2\left(-\frac{i}{x}\right)-\frac{1}{2}i\mathrm{Li}_2\left(\frac{i}{x}\right)-\frac{1}{4}i\mathrm{Li}_2\left(-\frac{1}{2}i(x+i)\right)-\frac{\cot^{-1}(x)}{2x^2}-\frac{1}{8}i\log^2(-x+i$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[ArcCot[x]/(x^3*(1 + x^2)),x]
```

```
[Out] -1/2*ArcCot[x]/x^2 + Hypergeometric2F1[-1/2, 1, 1/2, -x^2]/(2*x) - (I/8)*Lo
g[I - x]^2 + (I/4)*Log[I - x]*Log[-((I - x)/x)] + (I/4)*Log[I - x]*Log[(-1/
2*I)*(I + x)] - (I/4)*Log[(-1/2*I)*(I - x)]*Log[I + x] + (I/4)*Log[-((I - x
)/x)]*Log[I + x] + (I/8)*Log[I + x]^2 - (I/4)*Log[I - x]*Log[(I + x)/x] - (
I/4)*Log[I + x]*Log[(I + x)/x] + (I/4)*PolyLog[2, (-1/2*I)*(I - x)] + (I/2)
*PolyLog[2, (-I)/x] - (I/2)*PolyLog[2, I/x] - (I/4)*PolyLog[2, (-1/2*I)*(I
+ x)]
```

fricas [F] time = 1.51, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{\mathrm{arccot}(x)}{x^5+x^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(x)/x^3/(x^2+1),x, algorithm="fricas")
```

```
[Out] integral(arccot(x)/(x^5 + x^3), x)
```

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

$$\int \frac{\operatorname{arccot}(x)}{(x^2+1)x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(x)/x^3/(x^2+1),x, algorithm="giac")
```

```
[Out] integrate(arccot(x)/((x^2 + 1)*x^3), x)
```

maple [B] time = 0.11, size = 180, normalized size = 2.50

$$-\frac{\operatorname{arccot}(x)}{2x^2}-\operatorname{arccot}(x)\ln(x)+\frac{\operatorname{arccot}(x)\ln\left(x^2+1\right)}{2}+\frac{i\operatorname{dilog}\left(-\frac{i(x+i)}{2}\right)}{4}-\frac{i\ln\left(x+i\right)\ln\left(\frac{i(x-i)}{2}\right)}{4}-\frac{i\ln(x)\ln\left(-ix+1\right)}{2}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arccot(x)/x^3/(x^2+1),x)
```

```
[Out] -1/2*arccot(x)/x^2-arccot(x)*ln(x)+1/2*arccot(x)*ln(x^2+1)+1/4*I*dilog(-1/2
*I*(x+I))-1/4*I*ln(x+I)*ln(1/2*I*(x-I))-1/2*I*ln(x)*ln(1-I*x)+1/2*I*ln(x)*l
n(1+I*x)-1/4*I*ln(x-I)*ln(x^2+1)-1/2*I*dilog(1-I*x)-1/8*I*ln(x+I)^2-1/4*I*d
ilog(1/2*I*(x-I))+1/2/x+1/2*arctan(x)+1/4*I*ln(x-I)*ln(-1/2*I*(x+I))+1/8*I*
ln(x-I)^2+1/4*I*ln(x+I)*ln(x^2+1)+1/2*I*dilog(1+I*x)
```

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

$$\int \frac{\operatorname{arccot}(x)}{(x^2+1)x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(x)/x^3/(x^2+1),x, algorithm="maxima")
```

```
[Out] integrate(arccot(x)/((x^2 + 1)*x^3), x)
```

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

$$\int \frac{\operatorname{acot}(x)}{x^3\,(x^2+1)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(acot(x)/(x^3*(x^2 + 1)),x)
```

```
[Out] int(acot(x)/(x^3*(x^2 + 1)), x)
```

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

$$\int \frac{\operatorname{acot}(x)}{x^3\,(x^2+1)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(acot(x)/x**3/(x**2+1),x)
```

```
[Out] Integral(acot(x)/(x**3*(x**2 + 1)), x)
```

3.45 $\int \frac{\cot^{-1}(x)}{x^4(1+x^2)}\,dx$

Optimal. Leaf size=47

$$-\frac{\cot^{-1}(x)}{3x^3}+\frac{1}{6x^2}-\frac{2}{3}\log\left(x^2+1\right)+\frac{4\log(x)}{3}-\frac{1}{2}\cot^{-1}(x)^2+\frac{\cot^{-1}(x)}{x}$$

```
[Out] 1/6/x^2-1/3*arccot(x)/x^3+arccot(x)/x-1/2*arccot(x)^2+4/3*ln(x)-2/3*ln(x^2+
1)
```

Rubi [A] time = 0.11, antiderivative size = 47, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 8, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.615, Rules used = {4919, 4853, 266, 44, 36, 29, 31, 4885}

$$\frac{1}{6x^2}-\frac{2}{3}\log\left(x^2+1\right)-\frac{\cot^{-1}(x)}{3x^3}+\frac{4\log(x)}{3}-\frac{1}{2}\cot^{-1}(x)^2+\frac{\cot^{-1}(x)}{x}$$

Antiderivative was successfully verified.

```
[In] Int[ArcCot[x]/(x^4*(1 + x^2)),x]
```

```
[Out] 1/(6*x^2) - ArcCot[x]/(3*x^3) + ArcCot[x]/x - ArcCot[x]^2/2 + (4*Log[x])/3
- (2*Log[1 + x^2])/3
```

Rule 29

```
Int[(x_)^(-1), x_Symbol] :> Simp[Log[x], x]
```

Rule 31

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

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
 x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 44

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

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 4853

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcCot[c*x])^p)/(d*(m + 1)), x] + Dist[(b*c*p
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcCot[c*x])^(p - 1))/(1 + c^2*x^2
), x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[p, 0] && (EqQ[p, 1] || Integ
erQ[m]) && NeQ[m, -1]
```

Rule 4885

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)^2), x_Symbo
l] :> -Simp[(a + b*ArcCot[c*x])^(p + 1)/(b*c*d*(p + 1)), x] /; FreeQ[{a, b,
 c, d, e, p}, x] && EqQ[e, c^2*d] && NeQ[p, -1]
```

Rule 4919

```
Int[(((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)*((f_.)*(x_))^(m_))/((d_) + (e
_.)*(x_)^2), x_Symbol] :> Dist[1/d, Int[(f*x)^m*(a + b*ArcCot[c*x])^p, x],
x] - Dist[e/(d*f^2), Int[((f*x)^(m + 2)*(a + b*ArcCot[c*x])^p)/(d + e*x^2),
 x], x] /; FreeQ[{a, b, c, d, e, f}, x] && GtQ[p, 0] && LtQ[m, -1]
```

Rubi steps

$$
\begin{aligned}
\int \frac{\cot^{-1}(x)}{x^4\left(1+x^2\right)}\,dx &= \int \frac{\cot^{-1}(x)}{x^4}\,dx-\int \frac{\cot^{-1}(x)}{x^2\left(1+x^2\right)}\,dx\\
&=-\frac{\cot^{-1}(x)}{3x^3}-\frac{1}{3}\int \frac{1}{x^3\left(1+x^2\right)}\,dx-\int \frac{\cot^{-1}(x)}{x^2}\,dx+\int \frac{\cot^{-1}(x)}{1+x^2}\,dx\\
&=-\frac{\cot^{-1}(x)}{3x^3}+\frac{\cot^{-1}(x)}{x}-\frac{1}{2}\cot^{-1}(x)^2-\frac{1}{6}\text{Subst}\left(\int \frac{1}{x^2(1+x)}\,dx,x,x^2\right)+\int \frac{1}{x\left(1+x^2\right)}\,dx\\
&=-\frac{\cot^{-1}(x)}{3x^3}+\frac{\cot^{-1}(x)}{x}-\frac{1}{2}\cot^{-1}(x)^2-\frac{1}{6}\text{Subst}\left(\int \left(\frac{1}{x^2}-\frac{1}{x}+\frac{1}{1+x}\right)dx,x,x^2\right)+\frac{1}{2}\text{Subst}\left(\int\right.\\
&=\frac{1}{6x^2}-\frac{\cot^{-1}(x)}{3x^3}+\frac{\cot^{-1}(x)}{x}-\frac{1}{2}\cot^{-1}(x)^2+\frac{\log(x)}{3}-\frac{1}{6}\log\left(1+x^2\right)+\frac{1}{2}\text{Subst}\left(\int \frac{1}{x}\,dx,x,x^2\right.\\
&=\frac{1}{6x^2}-\frac{\cot^{-1}(x)}{3x^3}+\frac{\cot^{-1}(x)}{x}-\frac{1}{2}\cot^{-1}(x)^2+\frac{4\log(x)}{3}-\frac{2}{3}\log\left(1+x^2\right)
\end{aligned}
$$

Mathematica [A] time = 0.02, size = 47, normalized size = 1.00

$$-\frac{\cot^{-1}(x)}{3x^3}+\frac{1}{6x^2}-\frac{2}{3}\log\left(x^2+1\right)+\frac{4\log(x)}{3}-\frac{1}{2}\cot^{-1}(x)^2+\frac{\cot^{-1}(x)}{x}$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcCot[x]/(x^4*(1 + x^2)),x]
```

```
[Out] 1/(6*x^2) - ArcCot[x]/(3*x^3) + ArcCot[x]/x - ArcCot[x]^2/2 + (4*Log[x])/3
- (2*Log[1 + x^2])/3
```

fricas [A] time = 0.66, size = 47, normalized size = 1.00

$$-\frac{3\,x^3\operatorname{arccot}(x)^2+4\,x^3\log\left(x^2+1\right)-8\,x^3\log(x)-2\left(3\,x^2-1\right)\operatorname{arccot}(x)-x}{6\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(x)/x^4/(x^2+1),x, algorithm="fricas")
```

```
[Out] -1/6*(3*x^3*arccot(x)^2 + 4*x^3*log(x^2 + 1) - 8*x^3*log(x) - 2*(3*x^2 - 1)
*arccot(x) - x)/x^3
```

giac [A] time = 0.12, size = 39, normalized size = 0.83

$$-\frac{1}{2}\arctan\left(\frac{1}{x}\right)^2+\frac{\arctan\left(\frac{1}{x}\right)}{x}+\frac{1}{6\,x^2}-\frac{\arctan\left(\frac{1}{x}\right)}{3\,x^3}-\frac{2}{3}\log\left(\frac{1}{x^2}+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(x)/x^4/(x^2+1),x, algorithm="giac")
```

```
[Out] -1/2*arctan(1/x)^2 + arctan(1/x)/x + 1/6/x^2 - 1/3*arctan(1/x)/x^3 - 2/3*lo
g(1/x^2 + 1)
```

maple [A] time = 0.06, size = 43, normalized size = 0.91

$$-\frac{\operatorname{arccot}(x)}{3x^3}+\frac{\operatorname{arccot}(x)}{x}+\operatorname{arccot}(x)\arctan(x)+\frac{1}{6x^2}+\frac{4\ln(x)}{3}-\frac{2\ln\left(x^2+1\right)}{3}+\frac{\arctan(x)^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arccot(x)/x^4/(x^2+1),x)
```

```
[Out] -1/3*arccot(x)/x^3+arccot(x)/x+arccot(x)*arctan(x)+1/6/x^2+4/3*ln(x)-2/3*ln
(x^2+1)+1/2*arctan(x)^2
```

maxima [A] time = 0.42, size = 55, normalized size = 1.17

$$\frac{1}{3}\left(\frac{3\,x^2-1}{x^3}+3\,\arctan(x)\right)\operatorname{arccot}(x)+\frac{3\,x^2\arctan(x)^2-4\,x^2\log\left(x^2+1\right)+8\,x^2\log(x)+1}{6\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(x)/x^4/(x^2+1),x, algorithm="maxima")
```

```
[Out] 1/3*((3*x^2 - 1)/x^3 + 3*arctan(x))*arccot(x) + 1/6*(3*x^2*arctan(x)^2 - 4*
x^2*log(x^2 + 1) + 8*x^2*log(x) + 1)/x^2
```

mupad [B] time = 0.10, size = 35, normalized size = 0.74

$$\frac{4\,\ln(x)}{3}-\frac{2\,\ln\left(x^2+1\right)}{3}-\frac{\operatorname{acot}(x)^2}{2}+\frac{1}{6\,x^2}+\frac{\operatorname{acot}(x)\,\left(x^2-\frac{1}{3}\right)}{x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(acot(x)/(x^4*(x^2 + 1)),x)
```

```
[Out] (4*log(x))/3 - (2*log(x^2 + 1))/3 - acot(x)^2/2 + 1/(6*x^2) + (acot(x)*(x^2
 - 1/3))/x^3
```

sympy [A] time = 0.85, size = 42, normalized size = 0.89

$$\frac{4\log{(x)}}{3}-\frac{2\log{\left(x^2+1\right)}}{3}-\frac{\operatorname{acot}^2{(x)}}{2}+\frac{\operatorname{acot}{(x)}}{x}+\frac{1}{6x^2}-\frac{\operatorname{acot}{(x)}}{3x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(acot(x)/x**4/(x**2+1),x)
```

```
[Out] 4*log(x)/3 - 2*log(x**2 + 1)/3 - acot(x)**2/2 + acot(x)/x + 1/(6*x**2) - ac
ot(x)/(3*x**3)
```

3.46 $\int \frac{x^2 \cot^{-1}(cx)}{1+x^2} dx$

Optimal. Leaf size=206

$$\frac{\log(c^2x^2+1)}{2c}+\frac{1}{4}\text{Li}_2\left(\frac{2i(i-cx)}{(1-c)(1-ix)}+1\right)-\frac{1}{4}\text{Li}_2\left(\frac{2i(cx+i)}{(c+1)(1-ix)}+1\right)+x\cot^{-1}(cx)-\frac{1}{2}i\tan^{-1}(x)\log\left(1-\frac{i}{cx}\right)+\frac{1}{2}i\,t$$

```
[Out] x*arccot(c*x)-1/2*I*arctan(x)*ln(1-I/c/x)+1/2*I*arctan(x)*ln(1+I/c/x)+1/2*I
*arctan(x)*ln(-2*I*(I-c*x)/(1-c)/(1-I*x))-1/2*I*arctan(x)*ln(-2*I*(I+c*x)/(
1+c)/(1-I*x))+1/2*ln(c^2*x^2+1)/c+1/4*polylog(2,1+2*I*(I-c*x)/(1-c)/(1-I*x)
)-1/4*polylog(2,1+2*I*(I+c*x)/(1+c)/(1-I*x))
```

Rubi [A] time = 0.58, antiderivative size = 206, normalized size of antiderivative = 1.00, number of steps used = 28, number of rules used = 15, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 1.000, Rules used = {4917, 4847, 260, 4909, 203, 2470, 6688, 12, 4876, 4848, 2391, 4856, 2402, 2315, 2447}

$$\frac{1}{4}\text{PolyLog}\left(2,1+\frac{2i(-cx+i)}{(1-c)(1-ix)}\right)-\frac{1}{4}\text{PolyLog}\left(2,1+\frac{2i(cx+i)}{(c+1)(1-ix)}\right)+\frac{\log(c^2x^2+1)}{2c}+x\cot^{-1}(cx)-\frac{1}{2}i\tan^{-1}(x)\,\text{lo}$$

Antiderivative was successfully verified.

```
[In] Int[(x^2*ArcCot[c*x])/(1 + x^2),x]
```

```
[Out] x*ArcCot[c*x] - (I/2)*ArcTan[x]*Log[1 - I/(c*x)] + (I/2)*ArcTan[x]*Log[1 +
I/(c*x)] + (I/2)*ArcTan[x]*Log[((-2*I)*(I - c*x))/((1 - c)*(1 - I*x))] - (I
/2)*ArcTan[x]*Log[((-2*I)*(I + c*x))/((1 + c)*(1 - I*x))] + Log[1 + c^2*x^2
]/(2*c) + PolyLog[2, 1 + ((2*I)*(I - c*x))/((1 - c)*(1 - I*x))]/4 - PolyLog
[2, 1 + ((2*I)*(I + c*x))/((1 + c)*(1 - I*x))]/4
```

Rule 12

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

Rule 203

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

Rule 260

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

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2391

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

Rule 2402

```
Int[Log[(c_.)/((d_) + (e_.)*(x_))]/((f_) + (g_.)*(x_)^2), x_Symbol] :> -Dis
t[e/g, Subst[Int[Log[2*d*x]/(1 - 2*d*x), x], x, 1/(d + e*x)], x] /; FreeQ[{
```

```
c, d, e, f, g}, x] && EqQ[c, 2*d] && EqQ[e^2*f + d^2*g, 0]
```

Rule 2447

```
Int[Log[u_]*(Pq_)^(m_.), x_Symbol] :> With[{C = FullSimplify[(Pq^m*(1 - u))
/D[u, x]]}, Simp[C*PolyLog[2, 1 - u], x] /; FreeQ[C, x]] /; IntegerQ[m] &&
PolyQ[Pq, x] && RationalFunctionQ[u, x] && LeQ[RationalFunctionExponents[u,
 x][[2]], Expon[Pq, x]]
```

Rule 2470

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_))^(p_.)]*(b_.))/((f_) + (g_.)
*(x_)^2), x_Symbol] :> With[{u = IntHide[1/(f + g*x^2), x]}, Simp[u*(a + b*
Log[c*(d + e*x^n)^p]), x] - Dist[b*e*n*p, Int[(u*x^(n - 1))/(d + e*x^n), x]
, x]] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && IntegerQ[n]
```

Rule 4847

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b*Ar
cCot[c*x])^p, x] + Dist[b*c*p, Int[(x*(a + b*ArcCot[c*x])^(p - 1))/(1 + c^2
*x^2), x], x] /; FreeQ[{a, b, c}, x] && IGtQ[p, 0]
```

Rule 4848

```
Int[((a_.) + ArcTan[(c_.)*(x_)]*(b_.))/(x_), x_Symbol] :> Simp[a*Log[x], x]
 + (Dist[(I*b)/2, Int[Log[1 - I*c*x]/x, x], x] - Dist[(I*b)/2, Int[Log[1 +
I*c*x]/x, x], x]) /; FreeQ[{a, b, c}, x]
```

Rule 4856

```
Int[((a_.) + ArcTan[(c_.)*(x_)]*(b_.))/((d_) + (e_.)*(x_)), x_Symbol] :> -S
imp[((a + b*ArcTan[c*x])*Log[2/(1 - I*c*x)])/e, x] + (Dist[(b*c)/e, Int[Log
[2/(1 - I*c*x)]/(1 + c^2*x^2), x], x] - Dist[(b*c)/e, Int[Log[(2*c*(d + e*x
))/((c*d + I*e)*(1 - I*c*x))]/(1 + c^2*x^2), x], x] + Simp[((a + b*ArcTan[c
*x])*Log[(2*c*(d + e*x))/((c*d + I*e)*(1 - I*c*x))])/e, x]) /; FreeQ[{a, b,
 c, d, e}, x] && NeQ[c^2*d^2 + e^2, 0]
```

Rule 4876

```
Int[((a_.) + ArcTan[(c_.)*(x_)]*(b_.))^(p_.)*((f_.)*(x_))^(m_.)*((d_) + (e_
.)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*ArcTan[c*x])^p, (f*
x)^m*(d + e*x)^q, x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && IGtQ[p, 0] &
& IntegerQ[q] && (GtQ[q, 0] || NeQ[a, 0] || IntegerQ[m])
```

Rule 4909

```
Int[ArcCot[(c_.)*(x_)]/((d_.) + (e_.)*(x_)^2), x_Symbol] :> Dist[I/2, Int[L
og[1 - I/(c*x)]/(d + e*x^2), x], x] - Dist[I/2, Int[Log[1 + I/(c*x)]/(d + e
*x^2), x], x] /; FreeQ[{c, d, e}, x]
```

Rule 4917

```
Int[(((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)*((f_.)*(x_))^(m_))/((d_) + (e
_.)*(x_)^2), x_Symbol] :> Dist[f^2/e, Int[(f*x)^(m - 2)*(a + b*ArcCot[c*x])
^p, x], x] - Dist[(d*f^2)/e, Int[((f*x)^(m - 2)*(a + b*ArcCot[c*x])^p)/(d +
 e*x^2), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && GtQ[p, 0] && GtQ[m, 1]
```

Rule 6688

```
Int[u_, x_Symbol] :> With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; Simpl
erIntegrandQ[v, u, x]]
```

Rubi steps

$$\int \frac{x^2 \cot^{-1}(cx)}{1+x^2}\,dx = \int \cot^{-1}(cx)\,dx - \int \frac{\cot^{-1}(cx)}{1+x^2}\,dx$$

$$= x\cot^{-1}(cx) - \frac{1}{2}i\int \frac{\log\left(1-\frac{i}{cx}\right)}{1+x^2}\,dx + \frac{1}{2}i\int \frac{\log\left(1+\frac{i}{cx}\right)}{1+x^2}\,dx + c\int \frac{x}{1+c^2x^2}\,dx$$

$$= x\cot^{-1}(cx) - \frac{1}{2}i\tan^{-1}(x)\log\left(1-\frac{i}{cx}\right) + \frac{1}{2}i\tan^{-1}(x)\log\left(1+\frac{i}{cx}\right) + \frac{\log\left(1+c^2x^2\right)}{2c} - \frac{\int \frac{\tan}{(1-}}{2}$$

$$= x\cot^{-1}(cx) - \frac{1}{2}i\tan^{-1}(x)\log\left(1-\frac{i}{cx}\right) + \frac{1}{2}i\tan^{-1}(x)\log\left(1+\frac{i}{cx}\right) + \frac{\log\left(1+c^2x^2\right)}{2c} - \frac{\int \frac{c\tan}{x(-i}}{2}$$

$$= x\cot^{-1}(cx) - \frac{1}{2}i\tan^{-1}(x)\log\left(1-\frac{i}{cx}\right) + \frac{1}{2}i\tan^{-1}(x)\log\left(1+\frac{i}{cx}\right) + \frac{\log\left(1+c^2x^2\right)}{2c} - \frac{1}{2}\int \frac{}{x}$$

$$= x\cot^{-1}(cx) - \frac{1}{2}i\tan^{-1}(x)\log\left(1-\frac{i}{cx}\right) + \frac{1}{2}i\tan^{-1}(x)\log\left(1+\frac{i}{cx}\right) + \frac{\log\left(1+c^2x^2\right)}{2c} - \frac{1}{2}\int \Big($$

$$= x\cot^{-1}(cx) - \frac{1}{2}i\tan^{-1}(x)\log\left(1-\frac{i}{cx}\right) + \frac{1}{2}i\tan^{-1}(x)\log\left(1+\frac{i}{cx}\right) + \frac{\log\left(1+c^2x^2\right)}{2c} + \frac{1}{2}(ic)$$

$$= x\cot^{-1}(cx) - \frac{1}{2}i\tan^{-1}(x)\log\left(1-\frac{i}{cx}\right) + \frac{1}{2}i\tan^{-1}(x)\log\left(1+\frac{i}{cx}\right) + \frac{1}{2}i\tan^{-1}(x)\log\left(-\frac{2i(}{(1-}\right.$$

$$= x\cot^{-1}(cx) - \frac{1}{2}i\tan^{-1}(x)\log\left(1-\frac{i}{cx}\right) + \frac{1}{2}i\tan^{-1}(x)\log\left(1+\frac{i}{cx}\right) + \frac{1}{2}i\tan^{-1}(x)\log\left(-\frac{2i(}{(1-}\right.$$

Mathematica [B] time = 1.77, size = 626, normalized size = 3.04

$$\frac{1}{4}\sqrt{-c^2}\left(i\left(\text{Li}_2\left(\frac{\left(c^2+2i\sqrt{-c^2}+1\right)\left(cx+\sqrt{-c^2}\right)}{\left(c^2-1\right)\left(\sqrt{-c^2}-cx\right)}\right)-\text{Li}_2\left(\frac{\left(c^2-2i\sqrt{-c^2}+1\right)\left(cx+\sqrt{-c^2}\right)}{\left(c^2-1\right)\left(\sqrt{-c^2}-cx\right)}\right)\right)+2\cos^{-1}\left(\frac{c^2+1}{c^2-1}\right)\tanh^{-1}\left(\frac{\sqrt{-c^2}}{cx}\right)-4\cot^{-1}(c$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^2*ArcCot[c*x])/(1 + x^2),x]
```

```
[Out] (c*x*ArcCot[c*x] - Log[1/(c*Sqrt[1 + 1/(c^2*x^2)]*x)] + (Sqrt[-c^2]*(2*ArcC
os[(1 + c^2)/(-1 + c^2)]*ArcTanh[Sqrt[-c^2]/(c*x)] - 4*ArcCot[c*x]*ArcTanh[
(c*x)/Sqrt[-c^2]] - (ArcCos[(1 + c^2)/(-1 + c^2)] - (2*I)*ArcTanh[Sqrt[-c^2
]/(c*x)])*Log[(-2*(c^2 + I*Sqrt[-c^2])*(-I + c*x))/((-1 + c^2)*(Sqrt[-c^2]
- c*x))] - (ArcCos[(1 + c^2)/(-1 + c^2)] + (2*I)*ArcTanh[Sqrt[-c^2]/(c*x)])
*Log[((2*I)*(I*c^2 + Sqrt[-c^2])*(I + c*x))/((-1 + c^2)*(Sqrt[-c^2] - c*x))
] + (ArcCos[(1 + c^2)/(-1 + c^2)] - (2*I)*ArcTanh[Sqrt[-c^2]/(c*x)] + (2*I)
*ArcTanh[(c*x)/Sqrt[-c^2]])*Log[(Sqrt[2]*Sqrt[-c^2])/(Sqrt[-1 + c^2]*E^(I*A
rcCot[c*x])*Sqrt[-1 - c^2 + (-1 + c^2)*Cos[2*ArcCot[c*x]]])] + (ArcCos[(1 +
 c^2)/(-1 + c^2)] + (2*I)*ArcTanh[Sqrt[-c^2]/(c*x)] - (2*I)*ArcTanh[(c*x)/S
qrt[-c^2]])*Log[(Sqrt[2]*Sqrt[-c^2]*E^(I*ArcCot[c*x]))/(Sqrt[-1 + c^2]*Sqrt
[-1 - c^2 + (-1 + c^2)*Cos[2*ArcCot[c*x]]])] + I*(-PolyLog[2, ((1 + c^2 - (
2*I)*Sqrt[-c^2])*(Sqrt[-c^2] + c*x))/((-1 + c^2)*(Sqrt[-c^2] - c*x))] + Pol
yLog[2, ((1 + c^2 + (2*I)*Sqrt[-c^2])*(Sqrt[-c^2] + c*x))/((-1 + c^2)*(Sqrt
[-c^2] - c*x))])))/4)/c
```

fricas [F] time = 0.55, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{x^2 \operatorname{arccot}(cx)}{x^2+1}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*arccot(c*x)/(x^2+1),x, algorithm="fricas")
```

```
[Out] integral(x^2*arccot(c*x)/(x^2 + 1), x)
```

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

$$\int \frac{x^2 \operatorname{arccot}(cx)}{x^2+1}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*arccot(c*x)/(x^2+1),x, algorithm="giac")
```

```
[Out] integrate(x^2*arccot(c*x)/(x^2 + 1), x)
```

maple [A] time = 0.74, size = 265, normalized size = 1.29

$$-\operatorname{arccot}(cx)\arctan(x)+x\operatorname{arccot}(cx)+\frac{\ln\left(c^2x^2+1\right)}{2c}+\frac{ic\ln\left(1-\frac{(1+c)(ix+1)^2}{(x^2+1)(-1+c)}\right)\arctan(x)}{-2+2c}-\frac{i\ln\left(1-\frac{(1+c)(ix+1)^2}{(x^2+1)(-1+c)}\right)\text{a}}{2(-1+c)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*arccot(c*x)/(x^2+1),x)
```

```
[Out] -arccot(c*x)*arctan(x)+x*arccot(c*x)+1/2*ln(c^2*x^2+1)/c+1/2*I*c/(-1+c)*ln(
1-(1+c)*(1+I*x)^2/(x^2+1)/(-1+c))*arctan(x)-1/2*I/(-1+c)*ln(1-(1+c)*(1+I*x)
^2/(x^2+1)/(-1+c))*arctan(x)+1/2*c/(-1+c)*arctan(x)^2+1/4*c/(-1+c)*polylog(
2,(1+c)*(1+I*x)^2/(x^2+1)/(-1+c))-1/2/(-1+c)*arctan(x)^2-1/4/(-1+c)*polylog
(2,(1+c)*(1+I*x)^2/(x^2+1)/(-1+c))-1/2*I*arctan(x)*ln(1-(-1+c)*(1+I*x)^2/(x
^2+1)/(1+c))-1/2*arctan(x)^2-1/4*polylog(2,(-1+c)*(1+I*x)^2/(x^2+1)/(1+c))
```

maxima [A] time = 0.45, size = 189, normalized size = 0.92

$$(x-\arctan(x))\operatorname{arccot}(cx)-\frac{4\,c\arctan(cx)\arctan(x)-4\,c\arctan(x)\arctan\left(\frac{cx}{c-1},-\frac{1}{c-1}\right)+c\log\left(x^2+1\right)\log\left(\frac{}{c}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*arccot(c*x)/(x^2+1),x, algorithm="maxima")
```

```
[Out] (x - arctan(x))*arccot(c*x) - 1/8*(4*c*arctan(c*x)*arctan(x) - 4*c*arctan(x
)*arctan2(c*x/(c - 1), -1/(c - 1)) + c*log(x^2 + 1)*log((c^2*x^2 + 1)/(c^2
+ 2*c + 1)) - c*log(x^2 + 1)*log((c^2*x^2 + 1)/(c^2 - 2*c + 1)) + 2*c*dilog
((I*c*x + c)/(c + 1)) + 2*c*dilog(-(I*c*x - c)/(c + 1)) - 2*c*dilog((I*c*x
+ c)/(c - 1)) - 2*c*dilog(-(I*c*x - c)/(c - 1)) - 4*log(c^2*x^2 + 1))/c
```

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

$$\int \frac{x^2 \operatorname{acot}(c\,x)}{x^2+1}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^2*acot(c*x))/(x^2 + 1),x)
```

```
[Out] int((x^2*acot(c*x))/(x^2 + 1), x)
```

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

$$\int \frac{x^2 \operatorname{acot}(cx)}{x^2 + 1} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*acot(c*x)/(x**2+1),x)
[Out] Integral(x**2*acot(c*x)/(x**2 + 1), x)
```

3.47 $\int \frac{x\cot^{-1}(cx)}{1+x^2}\,dx$

Optimal. Leaf size=188

$$-\frac{1}{2}i\text{Li}_2\left(1-\frac{2}{1-icx}\right)+\frac{1}{4}i\text{Li}_2\left(1-\frac{2ic(i-x)}{(1-c)(1-icx)}\right)+\frac{1}{4}i\text{Li}_2\left(\frac{2ic(x+i)}{(c+1)(1-icx)}+1\right)+\log\left(\frac{2}{1-icx}\right)\left(-\cot^{-1}(cx)\right)+$$

```
[Out] -arccot(c*x)*ln(2/(1-I*c*x))+1/2*arccot(c*x)*ln(2*I*c*(I-x)/(1-c)/(1-I*c*x)
)+1/2*arccot(c*x)*ln(-2*I*c*(I+x)/(1+c)/(1-I*c*x))-1/2*I*polylog(2,1-2/(1-I
*c*x))+1/4*I*polylog(2,1-2*I*c*(I-x)/(1-c)/(1-I*c*x))+1/4*I*polylog(2,1+2*I
*c*(I+x)/(1+c)/(1-I*c*x))
```

Rubi [A] time = 0.18, antiderivative size = 188, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 5, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.385, Rules used = {4929, 4857, 2402, 2315, 2447}

$$-\frac{1}{2}i\text{PolyLog}\left(2,1-\frac{2}{1-icx}\right)+\frac{1}{4}i\text{PolyLog}\left(2,1-\frac{2ic(-x+i)}{(1-c)(1-icx)}\right)+\frac{1}{4}i\text{PolyLog}\left(2,1+\frac{2ic(x+i)}{(c+1)(1-icx)}\right)+\log\left(\right.$$

Antiderivative was successfully verified.

```
[In] Int[(x*ArcCot[c*x])/(1 + x^2),x]
```

```
[Out] -(ArcCot[c*x]*Log[2/(1 - I*c*x)]) + (ArcCot[c*x]*Log[((2*I)*c*(I - x))/((1
- c)*(1 - I*c*x))])/2 + (ArcCot[c*x]*Log[((-2*I)*c*(I + x))/((1 + c)*(1 - I
*c*x))])/2 - (I/2)*PolyLog[2, 1 - 2/(1 - I*c*x)] + (I/4)*PolyLog[2, 1 - ((2
*I)*c*(I - x))/((1 - c)*(1 - I*c*x))] + (I/4)*PolyLog[2, 1 + ((2*I)*c*(I +
x))/((1 + c)*(1 - I*c*x))]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2402

```
Int[Log[(c_.)/((d_) + (e_.)*(x_))]/((f_) + (g_.)*(x_)^2), x_Symbol] :> -Dis
t[e/g, Subst[Int[Log[2*d*x]/(1 - 2*d*x), x], x, 1/(d + e*x)], x] /; FreeQ[{
c, d, e, f, g}, x] && EqQ[c, 2*d] && EqQ[e^2*f + d^2*g, 0]
```

Rule 2447

```
Int[Log[u_]*(Pq_)^(m_.), x_Symbol] :> With[{C = FullSimplify[(Pq^m*(1 - u))
/D[u, x]]}, Simp[C*PolyLog[2, 1 - u], x] /; FreeQ[C, x]] /; IntegerQ[m] &&
PolyQ[Pq, x] && RationalFunctionQ[u, x] && LeQ[RationalFunctionExponents[u,
 x][[2]], Expon[Pq, x]]
```

Rule 4857

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))/((d_) + (e_.)*(x_)), x_Symbol] :> -S
imp[((a + b*ArcCot[c*x])*Log[2/(1 - I*c*x)])/e, x] + (-Dist[(b*c)/e, Int[Lo
g[2/(1 - I*c*x)]/(1 + c^2*x^2), x], x] + Dist[(b*c)/e, Int[Log[(2*c*(d + e*
x))/((c*d + I*e)*(1 - I*c*x))]/(1 + c^2*x^2), x], x] + Simp[((a + b*ArcCot[
c*x])*Log[(2*c*(d + e*x))/((c*d + I*e)*(1 - I*c*x))])/e, x]) /; FreeQ[{a, b
, c, d, e}, x] && NeQ[c^2*d^2 + e^2, 0]
```

Rule 4929

```
Int[(((a_.) + ArcCot[(c_.)*(x_)]*(b_.))*(x_)^(m_.))/((d_) + (e_.)*(x_)^2),
x_Symbol] :> Int[ExpandIntegrand[a + b*ArcCot[c*x], x^m/(d + e*x^2), x], x]
```

```
/; FreeQ[{a, b, c, d, e}, x] && IntegerQ[m] &&  !(EqQ[m, 1] && NeQ[a, 0])
```

Rubi steps

$$\int \frac{x\cot^{-1}(cx)}{1+x^2}\,dx = \int \left(-\frac{\cot^{-1}(cx)}{2(i-x)}+\frac{\cot^{-1}(cx)}{2(i+x)}\right)dx$$
$$= -\left(\frac{1}{2}\int \frac{\cot^{-1}(cx)}{i-x}\,dx\right)+\frac{1}{2}\int \frac{\cot^{-1}(cx)}{i+x}\,dx$$
$$= -\cot^{-1}(cx)\log\left(\frac{2}{1-icx}\right)+\frac{1}{2}\cot^{-1}(cx)\log\left(\frac{2ic(i-x)}{(1-c)(1-icx)}\right)+\frac{1}{2}\cot^{-1}(cx)\log\left(-\frac{2ic(i+}{(1+c)(1-}\right.$$
$$= -\cot^{-1}(cx)\log\left(\frac{2}{1-icx}\right)+\frac{1}{2}\cot^{-1}(cx)\log\left(\frac{2ic(i-x)}{(1-c)(1-icx)}\right)+\frac{1}{2}\cot^{-1}(cx)\log\left(-\frac{2ic(i+}{(1+c)(1-}\right.$$
$$= -\cot^{-1}(cx)\log\left(\frac{2}{1-icx}\right)+\frac{1}{2}\cot^{-1}(cx)\log\left(\frac{2ic(i-x)}{(1-c)(1-icx)}\right)+\frac{1}{2}\cot^{-1}(cx)\log\left(-\frac{2ic(i+}{(1+c)(1-}\right.$$

Mathematica [A] time = 0.09, size = 343, normalized size = 1.82

$$-\frac{1}{4}i\text{Li}_2\left(\frac{ic(i-x)}{1-c}\right)+\frac{1}{4}i\text{Li}_2\left(-\frac{ic(i-x)}{c+1}\right)+\frac{1}{4}i\text{Li}_2\left(\frac{ic(x+i)}{1-c}\right)-\frac{1}{4}i\text{Li}_2\left(-\frac{ic(x+i)}{c+1}\right)-\frac{1}{4}i\log(-x+i)\log\left(-\frac{i(-cx+i)}{1-c}\right)-\frac{1}{4}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(x*ArcCot[c*x])/(1 + x^2),x]
```

```
[Out] (-1/4*I)*Log[I - x]*Log[((-I)*(I - c*x))/(1 - c)] - (I/4)*Log[I + x]*Log[((
-I)*(I - c*x))/(1 + c)] + (I/4)*Log[I - x]*Log[-((I - c*x)/(c*x))] + (I/4)*
Log[I + x]*Log[-((I - c*x)/(c*x))] + (I/4)*Log[I + x]*Log[((-I)*(I + c*x))/
(1 - c)] + (I/4)*Log[I - x]*Log[((-I)*(I + c*x))/(1 + c)] - (I/4)*Log[I - x
]*Log[(I + c*x)/(c*x)] - (I/4)*Log[I + x]*Log[(I + c*x)/(c*x)] - (I/4)*Poly
Log[2, (I*c*(I - x))/(1 - c)] + (I/4)*PolyLog[2, ((-I)*c*(I - x))/(1 + c)]
+ (I/4)*PolyLog[2, (I*c*(I + x))/(1 - c)] - (I/4)*PolyLog[2, ((-I)*c*(I + x
))/(1 + c)]
```

fricas [F] time = 2.92, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{x\,\text{arccot}\,(cx)}{x^2+1},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*arccot(c*x)/(x^2+1),x, algorithm="fricas")
```

```
[Out] integral(x*arccot(c*x)/(x^2 + 1), x)
```

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

$$\int \frac{x\,\text{arccot}\,(cx)}{x^2+1}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*arccot(c*x)/(x^2+1),x, algorithm="giac")
```

```
[Out] integrate(x*arccot(c*x)/(x^2 + 1), x)
```

maple [A] time = 0.32, size = 284, normalized size = 1.51

$$\frac{\ln\left(c^2x^2+c^2\right)\operatorname{arccot}(cx)}{2}+\frac{i\ln(cx-i)\ln\left(\frac{i(cx-i)-c-1}{-c-1}\right)}{4}+\frac{i\ln(cx-i)\ln\left(\frac{i(cx-i)+c-1}{-1+c}\right)}{4}-\frac{i\ln(cx-i)\ln\left(c^2x^2+c^2\right)}{4}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*arccot(c*x)/(x^2+1),x)
```

```
[Out] 1/2*ln(c^2*x^2+c^2)*arccot(c*x)+1/4*I*ln(c*x-I)*ln((I*(c*x-I)-c-1)/(-c-1))+
1/4*I*ln(c*x-I)*ln((I*(c*x-I)+c-1)/(-1+c))-1/4*I*ln(c*x-I)*ln(c^2*x^2+c^2)+
1/4*I*dilog((I*(c*x-I)-c-1)/(-c-1))+1/4*I*dilog((I*(c*x-I)+c-1)/(-1+c))-1/4
*I*ln(I+c*x)*ln((-I*(I+c*x)-c-1)/(-c-1))-1/4*I*ln(I+c*x)*ln((-I*(I+c*x)+c-1
)/(-1+c))+1/4*I*ln(I+c*x)*ln(c^2*x^2+c^2)-1/4*I*dilog((-I*(I+c*x)+c-1)/(-1+
c))-1/4*I*dilog((-I*(I+c*x)-c-1)/(-c-1))
```

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

$$\int \frac{x \operatorname{arccot}(cx)}{x^2+1}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*arccot(c*x)/(x^2+1),x, algorithm="maxima")
```

```
[Out] integrate(x*arccot(c*x)/(x^2 + 1), x)
```

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

$$\int \frac{x \operatorname{acot}(c\,x)}{x^2+1}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*acot(c*x))/(x^2 + 1),x)
```

```
[Out] int((x*acot(c*x))/(x^2 + 1), x)
```

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

$$\int \frac{x \operatorname{acot}(cx)}{x^2+1}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*acot(c*x)/(x**2+1),x)
```

```
[Out] Integral(x*acot(c*x)/(x**2 + 1), x)
```

3.48 $\int \frac{\cot^{-1}(cx)}{1+x^2}\,dx$

Optimal. Leaf size=183

$$-\frac{1}{4}\text{Li}_2\left(\frac{2i(i-cx)}{(1-c)(1-ix)}+1\right)+\frac{1}{4}\text{Li}_2\left(\frac{2i(cx+i)}{(c+1)(1-ix)}+1\right)+\frac{1}{2}i\tan^{-1}(x)\log\left(1-\frac{i}{cx}\right)-\frac{1}{2}i\tan^{-1}(x)\log\left(1+\frac{i}{cx}\right)-\frac{1}{2}i\,\text{ta}$$

```
[Out] 1/2*I*arctan(x)*ln(1-I/c/x)-1/2*I*arctan(x)*ln(1+I/c/x)-1/2*I*arctan(x)*ln(
-2*I*(I-c*x)/(1-c)/(1-I*x))+1/2*I*arctan(x)*ln(-2*I*(I+c*x)/(1+c)/(1-I*x))-
1/4*polylog(2,1+2*I*(I-c*x)/(1-c)/(1-I*x))+1/4*polylog(2,1+2*I*(I+c*x)/(1+c
)/(1-I*x))
```

Rubi [A] time = 0.46, antiderivative size = 183, normalized size of antiderivative = 1.00, number of steps used = 25, number of rules used = 13, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 1.083, Rules used = {4909, 203, 2470, 260, 6688, 12, 4876, 4848, 2391, 4856, 2402, 2315, 2447}

$$-\frac{1}{4}\text{PolyLog}\left(2,1+\frac{2i(-cx+i)}{(1-c)(1-ix)}\right)+\frac{1}{4}\text{PolyLog}\left(2,1+\frac{2i(cx+i)}{(c+1)(1-ix)}\right)+\frac{1}{2}i\tan^{-1}(x)\log\left(1-\frac{i}{cx}\right)-\frac{1}{2}i\tan^{-1}(x)\,\text{log}$$

Antiderivative was successfully verified.

```
[In] Int[ArcCot[c*x]/(1 + x^2),x]
```

```
[Out] (I/2)*ArcTan[x]*Log[1 - I/(c*x)] - (I/2)*ArcTan[x]*Log[1 + I/(c*x)] - (I/2)
*ArcTan[x]*Log[((-2*I)*(I - c*x))/((1 - c)*(1 - I*x))] + (I/2)*ArcTan[x]*Lo
g[((-2*I)*(I + c*x))/((1 + c)*(1 - I*x))] - PolyLog[2, 1 + ((2*I)*(I - c*x)
)/((1 - c)*(1 - I*x))]/4 + PolyLog[2, 1 + ((2*I)*(I + c*x))/((1 + c)*(1 - I
*x))]/4
```

Rule 12

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

Rule 203

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

Rule 260

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

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2391

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

Rule 2402

```
Int[Log[(c_.)/((d_) + (e_.)*(x_))]/((f_) + (g_.)*(x_)^2), x_Symbol] :> -Dis
t[e/g, Subst[Int[Log[2*d*x]/(1 - 2*d*x), x], x, 1/(d + e*x)], x] /; FreeQ[{
```

```
c, d, e, f, g}, x] && EqQ[c, 2*d] && EqQ[e^2*f + d^2*g, 0]
```

Rule 2447

```
Int[Log[u_]*(Pq_)^(m_.), x_Symbol] :> With[{C = FullSimplify[(Pq^m*(1 - u))
/D[u, x]]}, Simp[C*PolyLog[2, 1 - u], x] /; FreeQ[C, x]] /; IntegerQ[m] &&
PolyQ[Pq, x] && RationalFunctionQ[u, x] && LeQ[RationalFunctionExponents[u,
 x][[2]], Expon[Pq, x]]
```

Rule 2470

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_))^(p_.)]*(b_.))/((f_) + (g_.)
*(x_)^2), x_Symbol] :> With[{u = IntHide[1/(f + g*x^2), x]}, Simp[u*(a + b*
Log[c*(d + e*x^n)^p]), x] - Dist[b*e*n*p, Int[(u*x^(n - 1))/(d + e*x^n), x]
, x]] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && IntegerQ[n]
```

Rule 4848

```
Int[((a_.) + ArcTan[(c_.)*(x_)]*(b_.))/(x_), x_Symbol] :> Simp[a*Log[x], x]
 + (Dist[(I*b)/2, Int[Log[1 - I*c*x]/x, x], x] - Dist[(I*b)/2, Int[Log[1 +
I*c*x]/x, x], x]) /; FreeQ[{a, b, c}, x]
```

Rule 4856

```
Int[((a_.) + ArcTan[(c_.)*(x_)]*(b_.))/((d_) + (e_.)*(x_)), x_Symbol] :> -S
imp[((a + b*ArcTan[c*x])*Log[2/(1 - I*c*x)])/e, x] + (Dist[(b*c)/e, Int[Log
[2/(1 - I*c*x)]/(1 + c^2*x^2), x], x] - Dist[(b*c)/e, Int[Log[(2*c*(d + e*x
))/((c*d + I*e)*(1 - I*c*x))]/(1 + c^2*x^2), x], x] + Simp[((a + b*ArcTan[c
*x])*Log[(2*c*(d + e*x))/((c*d + I*e)*(1 - I*c*x))])/e, x]) /; FreeQ[{a, b,
 c, d, e}, x] && NeQ[c^2*d^2 + e^2, 0]
```

Rule 4876

```
Int[((a_.) + ArcTan[(c_.)*(x_)]*(b_.))^(p_.)*((f_.)*(x_))^(m_.)*((d_) + (e_
.)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*ArcTan[c*x])^p, (f*
x)^m*(d + e*x)^q, x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && IGtQ[p, 0] &
& IntegerQ[q] && (GtQ[q, 0] || NeQ[a, 0] || IntegerQ[m])
```

Rule 4909

```
Int[ArcCot[(c_.)*(x_)]/((d_.) + (e_.)*(x_)^2), x_Symbol] :> Dist[I/2, Int[L
og[1 - I/(c*x)]/(d + e*x^2), x], x] - Dist[I/2, Int[Log[1 + I/(c*x)]/(d + e
*x^2), x], x] /; FreeQ[{c, d, e}, x]
```

Rule 6688

```
Int[u_, x_Symbol] :> With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; Simpl
erIntegrandQ[v, u, x]]
```

Rubi steps

$$\int \frac{\cot^{-1}(cx)}{1+x^2}\,dx = \frac{1}{2}i\int \frac{\log\left(1-\frac{i}{cx}\right)}{1+x^2}\,dx - \frac{1}{2}i\int \frac{\log\left(1+\frac{i}{cx}\right)}{1+x^2}\,dx$$

$$= \frac{1}{2}i\tan^{-1}(x)\log\left(1-\frac{i}{cx}\right) - \frac{1}{2}i\tan^{-1}(x)\log\left(1+\frac{i}{cx}\right) + \frac{\int \frac{\tan^{-1}(x)}{\left(1-\frac{i}{cx}\right)x^2}\,dx}{2c} + \frac{\int \frac{\tan^{-1}(x)}{\left(1+\frac{i}{cx}\right)x^2}\,dx}{2c}$$

$$= \frac{1}{2}i\tan^{-1}(x)\log\left(1-\frac{i}{cx}\right) - \frac{1}{2}i\tan^{-1}(x)\log\left(1+\frac{i}{cx}\right) + \frac{\int \frac{c\tan^{-1}(x)}{x(-i+cx)}\,dx}{2c} + \frac{\int \frac{c\tan^{-1}(x)}{x(i+cx)}\,dx}{2c}$$

$$= \frac{1}{2}i\tan^{-1}(x)\log\left(1-\frac{i}{cx}\right) - \frac{1}{2}i\tan^{-1}(x)\log\left(1+\frac{i}{cx}\right) + \frac{1}{2}\int \frac{\tan^{-1}(x)}{x(-i+cx)}\,dx + \frac{1}{2}\int \frac{\tan^{-1}(x)}{x(i+cx)}\,dx$$

$$= \frac{1}{2}i\tan^{-1}(x)\log\left(1-\frac{i}{cx}\right) - \frac{1}{2}i\tan^{-1}(x)\log\left(1+\frac{i}{cx}\right) + \frac{1}{2}\int \left(\frac{i\tan^{-1}(x)}{x} - \frac{ic\tan^{-1}(x)}{-i+cx}\right)dx + \frac{1}{2}\ldots$$

$$= \frac{1}{2}i\tan^{-1}(x)\log\left(1-\frac{i}{cx}\right) - \frac{1}{2}i\tan^{-1}(x)\log\left(1+\frac{i}{cx}\right) - \frac{1}{2}(ic)\int \frac{\tan^{-1}(x)}{-i+cx}\,dx + \frac{1}{2}(ic)\int \frac{\tan^{-1}(x}{i+cx}$$

$$= \frac{1}{2}i\tan^{-1}(x)\log\left(1-\frac{i}{cx}\right) - \frac{1}{2}i\tan^{-1}(x)\log\left(1+\frac{i}{cx}\right) - \frac{1}{2}i\tan^{-1}(x)\log\left(-\frac{2i(i-cx)}{(1-c)(1-ix)}\right) + \frac{1}{2}i\,\mathrm{t}$$

$$= \frac{1}{2}i\tan^{-1}(x)\log\left(1-\frac{i}{cx}\right) - \frac{1}{2}i\tan^{-1}(x)\log\left(1+\frac{i}{cx}\right) - \frac{1}{2}i\tan^{-1}(x)\log\left(-\frac{2i(i-cx)}{(1-c)(1-ix)}\right) + \frac{1}{2}i\,\mathrm{t}$$

Mathematica [A] time = 0.09, size = 319, normalized size = 1.74

$$-\frac{1}{4}\mathrm{Li}_2\left(\frac{ic(i-x)}{1-c}\right)+\frac{1}{4}\mathrm{Li}_2\left(-\frac{ic(i-x)}{c+1}\right)-\frac{1}{4}\mathrm{Li}_2\left(\frac{ic(x+i)}{1-c}\right)+\frac{1}{4}\mathrm{Li}_2\left(-\frac{ic(x+i)}{c+1}\right)-\frac{1}{4}\log(-x+i)\log\left(-\frac{i(-cx+i)}{1-c}\right)+\frac{1}{4}\log$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[ArcCot[c*x]/(1 + x^2),x]
```

```
[Out] -1/4*(Log[I - x]*Log[((-I)*(I - c*x))/(1 - c)]) + (Log[I + x]*Log[((-I)*(I
- c*x))/(1 + c)])/4 + (Log[I - x]*Log[-((I - c*x)/(c*x))])/4 - (Log[I + x]*
Log[-((I - c*x)/(c*x))])/4 - (Log[I + x]*Log[((-I)*(I + c*x))/(1 - c)])/4 +
 (Log[I - x]*Log[((-I)*(I + c*x))/(1 + c)])/4 - (Log[I - x]*Log[(I + c*x)/(
c*x)])/4 + (Log[I + x]*Log[(I + c*x)/(c*x)])/4 - PolyLog[2, (I*c*(I - x))/(
1 - c)]/4 + PolyLog[2, ((-I)*c*(I - x))/(1 + c)]/4 - PolyLog[2, (I*c*(I + x
))/(1 - c)]/4 + PolyLog[2, ((-I)*c*(I + x))/(1 + c)]/4
```

fricas [F] time = 0.60, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{\mathrm{arccot}\,(cx)}{x^2+1},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(c*x)/(x^2+1),x, algorithm="fricas")
```

```
[Out] integral(arccot(c*x)/(x^2 + 1), x)
```

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

$$\int \frac{\mathrm{arccot}\,(cx)}{x^2+1}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(c*x)/(x^2+1),x, algorithm="giac")
```

```
[Out] integrate(arccot(c*x)/(x^2 + 1), x)
```

maple [A] time = 0.68, size = 304, normalized size = 1.66

$$\operatorname{arccot}(cx)\arctan(x)+\arctan(cx)\arctan(x)+\frac{i\arctan(cx)\ln\left(1-\frac{(1+c)(icx+1)^2}{(c^2x^2+1)(1-c)}\right)}{2}+\frac{\arctan(cx)^2}{2}+\frac{\operatorname{polylog}\left(2,\frac{(1-}{(c^2}\right.}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arccot(c*x)/(x^2+1),x)
```

```
[Out] arccot(c*x)*arctan(x)+arctan(c*x)*arctan(x)+1/2*I*arctan(c*x)*ln(1-(1+c)*(1
+I*c*x)^2/(c^2*x^2+1)/(1-c))+1/2*arctan(c*x)^2+1/4*polylog(2,(1+c)*(1+I*c*x
)^2/(c^2*x^2+1)/(1-c))-1/2*I*c/(1+c)*arctan(c*x)*ln(1-(-1+c)*(1+I*c*x)^2/(c
^2*x^2+1)/(-c-1))-1/2*I/(1+c)*ln(1-(-1+c)*(1+I*c*x)^2/(c^2*x^2+1)/(-c-1))*a
rctan(c*x)-1/2*c/(1+c)*arctan(c*x)^2-1/4*c/(1+c)*polylog(2,(-1+c)*(1+I*c*x)
^2/(c^2*x^2+1)/(-c-1))-1/2/(1+c)*arctan(c*x)^2-1/4/(1+c)*polylog(2,(-1+c)*(
1+I*c*x)^2/(c^2*x^2+1)/(-c-1))
```

maxima [A] time = 0.44, size = 187, normalized size = 1.02

$$-\frac{1}{8}c\left(\frac{8\arctan(cx)\arctan(x)}{c}-\frac{4\arctan(cx)\arctan(x)-4\arctan(x)\arctan\left(\frac{cx}{c-1},-\frac{1}{c-1}\right)+\log\left(x^2+1\right)\log\left(\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(c*x)/(x^2+1),x, algorithm="maxima")
```

```
[Out] -1/8*c*(8*arctan(c*x)*arctan(x)/c - (4*arctan(c*x)*arctan(x) - 4*arctan(x)*
arctan2(c*x/(c - 1), -1/(c - 1)) + log(x^2 + 1)*log((c^2*x^2 + 1)/(c^2 + 2*
c + 1)) - log(x^2 + 1)*log((c^2*x^2 + 1)/(c^2 - 2*c + 1)) + 2*dilog((I*c*x
+ c)/(c + 1)) + 2*dilog(-(I*c*x - c)/(c + 1)) - 2*dilog((I*c*x + c)/(c - 1)
) - 2*dilog(-(I*c*x - c)/(c - 1)))/c) + arccot(c*x)*arctan(x) + arctan(c*x)
*arctan(x)
```

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

$$\int \frac{\operatorname{acot}(c\,x)}{x^2+1}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(acot(c*x)/(x^2 + 1),x)
```

```
[Out] int(acot(c*x)/(x^2 + 1), x)
```

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

$$\int \frac{\operatorname{acot}(cx)}{x^2+1}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(acot(c*x)/(x**2+1),x)
```

```
[Out] Integral(acot(c*x)/(x**2 + 1), x)
```

3.49 $\int \frac{\cot^{-1}(cx)}{x(1+x^2)}\,dx$

Optimal. Leaf size=223

$$-\frac{1}{2}i\text{Li}_2\left(-\frac{i}{cx}\right)+\frac{1}{2}i\text{Li}_2\left(\frac{i}{cx}\right)+\frac{1}{2}i\text{Li}_2\left(1-\frac{2}{1-icx}\right)-\frac{1}{4}i\text{Li}_2\left(1-\frac{2ic(i-x)}{(1-c)(1-icx)}\right)-\frac{1}{4}i\text{Li}_2\left(\frac{2ic(x+i)}{(c+1)(1-icx)}+1\right)+\log\Big($$

```
[Out] arccot(c*x)*ln(2/(1-I*c*x))-1/2*arccot(c*x)*ln(2*I*c*(I-x)/(1-c)/(1-I*c*x))
-1/2*arccot(c*x)*ln(-2*I*c*(I+x)/(1+c)/(1-I*c*x))-1/2*I*polylog(2,-I/c/x)+1
/2*I*polylog(2,I/c/x)+1/2*I*polylog(2,1-2/(1-I*c*x))-1/4*I*polylog(2,1-2*I*
c*(I-x)/(1-c)/(1-I*c*x))-1/4*I*polylog(2,1+2*I*c*(I+x)/(1+c)/(1-I*c*x))
```

Rubi [A] time = 0.25, antiderivative size = 223, normalized size of antiderivative = 1.00, number of steps used = 15, number of rules used = 7, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.467, Rules used = {4929, 4849, 2391, 4857, 2402, 2315, 2447}

$$-\frac{1}{2}i\text{PolyLog}\left(2,-\frac{i}{cx}\right)+\frac{1}{2}i\text{PolyLog}\left(2,\frac{i}{cx}\right)+\frac{1}{2}i\text{PolyLog}\left(2,1-\frac{2}{1-icx}\right)-\frac{1}{4}i\text{PolyLog}\left(2,1-\frac{2ic(-x+i)}{(1-c)(1-icx)}\right)-\frac{1}{4}i$$

Antiderivative was successfully verified.

```
[In] Int[ArcCot[c*x]/(x*(1 + x^2)),x]
```

```
[Out] ArcCot[c*x]*Log[2/(1 - I*c*x)] - (ArcCot[c*x]*Log[((2*I)*c*(I - x))/((1 - c
)*(1 - I*c*x))])/2 - (ArcCot[c*x]*Log[((-2*I)*c*(I + x))/((1 + c)*(1 - I*c*
x))])/2 - (I/2)*PolyLog[2, (-I)/(c*x)] + (I/2)*PolyLog[2, I/(c*x)] + (I/2)*
PolyLog[2, 1 - 2/(1 - I*c*x)] - (I/4)*PolyLog[2, 1 - ((2*I)*c*(I - x))/((1
- c)*(1 - I*c*x))] - (I/4)*PolyLog[2, 1 + ((2*I)*c*(I + x))/((1 + c)*(1 - I
*c*x))]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2391

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

Rule 2402

```
Int[Log[(c_.)/((d_) + (e_.)*(x_))]/((f_) + (g_.)*(x_)^2), x_Symbol] :> -Dis
t[e/g, Subst[Int[Log[2*d*x]/(1 - 2*d*x), x], x, 1/(d + e*x)], x] /; FreeQ[{
c, d, e, f, g}, x] && EqQ[c, 2*d] && EqQ[e^2*f + d^2*g, 0]
```

Rule 2447

```
Int[Log[u_]*(Pq_)^(m_.), x_Symbol] :> With[{C = FullSimplify[(Pq^m*(1 - u))
/D[u, x]]}, Simp[C*PolyLog[2, 1 - u], x] /; FreeQ[C, x]] /; IntegerQ[m] &&
PolyQ[Pq, x] && RationalFunctionQ[u, x] && LeQ[RationalFunctionExponents[u,
 x][[2]], Expon[Pq, x]]
```

Rule 4849

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))/(x_), x_Symbol] :> Simp[a*Log[x], x]
 + (Dist[(I*b)/2, Int[Log[1 - I/(c*x)]/x, x], x] - Dist[(I*b)/2, Int[Log[1
+ I/(c*x)]/x, x], x]) /; FreeQ[{a, b, c}, x]
```

Rule 4857

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))/((d_) + (e_.)*(x_)), x_Symbol] :> -S
imp[((a + b*ArcCot[c*x])*Log[2/(1 - I*c*x)])/e, x] + (-Dist[(b*c)/e, Int[Lo
g[2/(1 - I*c*x)]/(1 + c^2*x^2), x], x] + Dist[(b*c)/e, Int[Log[(2*c*(d + e*
x))/((c*d + I*e)*(1 - I*c*x))]/(1 + c^2*x^2), x], x] + Simp[((a + b*ArcCot[
c*x])*Log[(2*c*(d + e*x))/((c*d + I*e)*(1 - I*c*x))])/e, x]) /; FreeQ[{a, b
, c, d, e}, x] && NeQ[c^2*d^2 + e^2, 0]
```

Rule 4929

```
Int[(((a_.) + ArcCot[(c_.)*(x_)]*(b_.))*(x_)^(m_.))/((d_) + (e_.)*(x_)^2),
x_Symbol] :> Int[ExpandIntegrand[a + b*ArcCot[c*x], x^m/(d + e*x^2), x], x]
 /; FreeQ[{a, b, c, d, e}, x] && IntegerQ[m] && !(EqQ[m, 1] && NeQ[a, 0])
```

Rubi steps

$$\begin{aligned}
\int \frac{\cot^{-1}(cx)}{x\left(1+x^2\right)}\,dx &= \int \left(\frac{\cot^{-1}(cx)}{x}-\frac{x\cot^{-1}(cx)}{1+x^2}\right)dx \\
&= \int \frac{\cot^{-1}(cx)}{x}\,dx-\int \frac{x\cot^{-1}(cx)}{1+x^2}\,dx \\
&= \frac{1}{2}i\int \frac{\log\left(1-\frac{i}{cx}\right)}{x}\,dx-\frac{1}{2}i\int \frac{\log\left(1+\frac{i}{cx}\right)}{x}\,dx-\int \left(-\frac{\cot^{-1}(cx)}{2(i-x)}+\frac{\cot^{-1}(cx)}{2(i+x)}\right)dx \\
&= -\frac{1}{2}i\text{Li}_2\left(-\frac{i}{cx}\right)+\frac{1}{2}i\text{Li}_2\left(\frac{i}{cx}\right)+\frac{1}{2}\int \frac{\cot^{-1}(cx)}{i-x}\,dx-\frac{1}{2}\int \frac{\cot^{-1}(cx)}{i+x}\,dx \\
&= \cot^{-1}(cx)\log\left(\frac{2}{1-icx}\right)-\frac{1}{2}\cot^{-1}(cx)\log\left(\frac{2ic(i-x)}{(1-c)(1-icx)}\right)-\frac{1}{2}\cot^{-1}(cx)\log\left(-\frac{2ic(i+x}{(1+c)(1-}\right. \\
&= \cot^{-1}(cx)\log\left(\frac{2}{1-icx}\right)-\frac{1}{2}\cot^{-1}(cx)\log\left(\frac{2ic(i-x)}{(1-c)(1-icx)}\right)-\frac{1}{2}\cot^{-1}(cx)\log\left(-\frac{2ic(i+x}{(1+c)(1-}\right. \\
&= \cot^{-1}(cx)\log\left(\frac{2}{1-icx}\right)-\frac{1}{2}\cot^{-1}(cx)\log\left(\frac{2ic(i-x)}{(1-c)(1-icx)}\right)-\frac{1}{2}\cot^{-1}(cx)\log\left(-\frac{2ic(i+x}{(1+c)(1-}\right.
\end{aligned}$$

Mathematica [A] time = 0.10, size = 379, normalized size = 1.70

$$\frac{1}{4}i\text{Li}_2\left(\frac{ic(i-x)}{1-c}\right)-\frac{1}{4}i\text{Li}_2\left(-\frac{ic(i-x)}{c+1}\right)-\frac{1}{2}i\text{Li}_2\left(-\frac{i}{cx}\right)+\frac{1}{2}i\text{Li}_2\left(\frac{i}{cx}\right)-\frac{1}{4}i\text{Li}_2\left(\frac{ic(x+i)}{1-c}\right)+\frac{1}{4}i\text{Li}_2\left(-\frac{ic(x+i)}{c+1}\right)+\frac{1}{4}i\log$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[ArcCot[c*x]/(x*(1 + x^2)),x]
```

```
[Out] (I/4)*Log[I - x]*Log[((-I)*(I - c*x))/(1 - c)] + (I/4)*Log[I + x]*Log[((-I)
*(I - c*x))/(1 + c)] - (I/4)*Log[I - x]*Log[-((I - c*x)/(c*x))] - (I/4)*Log
[I + x]*Log[-((I - c*x)/(c*x))] - (I/4)*Log[I + x]*Log[((-I)*(I + c*x))/(1
- c)] - (I/4)*Log[I - x]*Log[((-I)*(I + c*x))/(1 + c)] + (I/4)*Log[I - x]*L
og[(I + c*x)/(c*x)] + (I/4)*Log[I + x]*Log[(I + c*x)/(c*x)] + (I/4)*PolyLog
[2, (I*c*(I - x))/(1 - c)] - (I/4)*PolyLog[2, ((-I)*c*(I - x))/(1 + c)] - (
I/2)*PolyLog[2, (-I)/(c*x)] + (I/2)*PolyLog[2, I/(c*x)] - (I/4)*PolyLog[2,
(I*c*(I + x))/(1 - c)] + (I/4)*PolyLog[2, ((-I)*c*(I + x))/(1 + c)]
```

fricas [F] time = 1.46, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\text{arccot}\,(cx)}{x^3+x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(c*x)/x/(x^2+1),x, algorithm="fricas")
```

```
[Out] integral(arccot(c*x)/(x^3 + x), x)
```

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

$$\int \frac{\operatorname{arccot}(cx)}{(x^2+1)x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(c*x)/x/(x^2+1),x, algorithm="giac")
```

```
[Out] integrate(arccot(c*x)/((x^2 + 1)*x), x)
```

maple [A] time = 0.26, size = 345, normalized size = 1.55

$$\operatorname{arccot}(cx)\ln(cx)-\frac{\ln\left(c^2x^2+c^2\right)\operatorname{arccot}(cx)}{2}+\frac{i\operatorname{dilog}\left(\frac{-i(cx+i)+c-1}{-1+c}\right)}{4}-\frac{i\ln(cx-i)\ln\left(\frac{i(cx-i)-c-1}{-c-1}\right)}{4}+\frac{i\operatorname{dilog}\left(\frac{-i(cx+i)-c}{-c-1}\right.}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arccot(c*x)/x/(x^2+1),x)
```

```
[Out] arccot(c*x)*ln(c*x)-1/2*ln(c^2*x^2+c^2)*arccot(c*x)-1/4*I*ln(c*x-I)*ln((I*(
c*x-I)-c-1)/(-c-1))-1/4*I*dilog((I*(c*x-I)-c-1)/(-c-1))+1/4*I*ln(I+c*x)*ln(
(-I*(I+c*x)-c-1)/(-c-1))+1/4*I*dilog((-I*(I+c*x)+c-1)/(-1+c))+1/2*I*ln(c*x)
*ln(1-I*c*x)+1/2*I*dilog(1-I*c*x)+1/4*I*ln(I+c*x)*ln((-I*(I+c*x)+c-1)/(-1+c
))-1/2*I*ln(c*x)*ln(1+I*c*x)-1/4*I*ln(c*x-I)*ln((I*(c*x-I)+c-1)/(-1+c))-1/2
*I*dilog(1+I*c*x)-1/4*I*ln(I+c*x)*ln(c^2*x^2+c^2)+1/4*I*dilog((-I*(I+c*x)-c
-1)/(-c-1))-1/4*I*dilog((I*(c*x-I)+c-1)/(-1+c))+1/4*I*ln(c*x-I)*ln(c^2*x^2+
c^2)
```

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

$$\int \frac{\operatorname{arccot}(cx)}{(x^2+1)x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(c*x)/x/(x^2+1),x, algorithm="maxima")
```

```
[Out] integrate(arccot(c*x)/((x^2 + 1)*x), x)
```

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

$$\int \frac{\operatorname{acot}(c\,x)}{x\,(x^2+1)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(acot(c*x)/(x*(x^2 + 1)),x)
```

```
[Out] int(acot(c*x)/(x*(x^2 + 1)), x)
```

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

$$\int \frac{\operatorname{acot}(cx)}{x(x^2+1)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(acot(c*x)/x/(x**2+1),x)
```

```
[Out] Integral(acot(c*x)/(x*(x**2 + 1)), x)
```

3.50 $\int \frac{\cot^{-1}(cx)}{x^2(1+x^2)}\,dx$

Optimal. Leaf size=212

$$\frac{1}{2}c\log\left(c^2x^2+1\right)+\frac{1}{4}\text{Li}_2\left(\frac{2i(i-cx)}{(1-c)(1-ix)}+1\right)-\frac{1}{4}\text{Li}_2\left(\frac{2i(cx+i)}{(c+1)(1-ix)}+1\right)-c\log(x)-\frac{\cot^{-1}(cx)}{x}-\frac{1}{2}i\tan^{-1}(x)\log\left(1\right.$$

```
[Out] -arccot(c*x)/x-1/2*I*arctan(x)*ln(1-I/c/x)+1/2*I*arctan(x)*ln(1+I/c/x)-c*ln
(x)+1/2*I*arctan(x)*ln(-2*I*(I-c*x)/(1-c)/(1-I*x))-1/2*I*arctan(x)*ln(-2*I*
(I+c*x)/(1+c)/(1-I*x))+1/2*c*ln(c^2*x^2+1)+1/4*polylog(2,1+2*I*(I-c*x)/(1-c
)/(1-I*x))-1/4*polylog(2,1+2*I*(I+c*x)/(1+c)/(1-I*x))
```

Rubi [A] time = 0.50, antiderivative size = 212, normalized size of antiderivative = 1.00, number of steps used = 31, number of rules used = 19, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 1.267, Rules used = {4919, 4853, 266, 36, 29, 31, 4909, 203, 2470, 260, 6688, 12, 4876, 4848, 2391, 4856, 2402, 2315, 2447}

$$\frac{1}{4}\text{PolyLog}\left(2,1+\frac{2i(-cx+i)}{(1-c)(1-ix)}\right)-\frac{1}{4}\text{PolyLog}\left(2,1+\frac{2i(cx+i)}{(c+1)(1-ix)}\right)+\frac{1}{2}c\log\left(c^2x^2+1\right)-c\log(x)-\frac{\cot^{-1}(cx)}{x}-\frac{1}{2}i$$

Antiderivative was successfully verified.

```
[In] Int[ArcCot[c*x]/(x^2*(1 + x^2)),x]
```

```
[Out] -(ArcCot[c*x]/x) - (I/2)*ArcTan[x]*Log[1 - I/(c*x)] + (I/2)*ArcTan[x]*Log[1
 + I/(c*x)] - c*Log[x] + (I/2)*ArcTan[x]*Log[((-2*I)*(I - c*x))/((1 - c)*(1
 - I*x))] - (I/2)*ArcTan[x]*Log[((-2*I)*(I + c*x))/((1 + c)*(1 - I*x))] + (
c*Log[1 + c^2*x^2])/2 + PolyLog[2, 1 + ((2*I)*(I - c*x))/((1 - c)*(1 - I*x)
)]/4 - PolyLog[2, 1 + ((2*I)*(I + c*x))/((1 + c)*(1 - I*x))]/4
```

Rule 12

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

Rule 29

```
Int[(x_)^(-1), x_Symbol] :> Simp[Log[x], x]
```

Rule 31

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

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
 x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 203

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

Rule 260

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

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2391

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

Rule 2402

```
Int[Log[(c_.)/((d_) + (e_.)*(x_))]/((f_) + (g_.)*(x_)^2), x_Symbol] :> -Dis
t[e/g, Subst[Int[Log[2*d*x]/(1 - 2*d*x), x], x, 1/(d + e*x)], x] /; FreeQ[{
c, d, e, f, g}, x] && EqQ[c, 2*d] && EqQ[e^2*f + d^2*g, 0]
```

Rule 2447

```
Int[Log[u_]*(Pq_)^(m_.), x_Symbol] :> With[{C = FullSimplify[(Pq^m*(1 - u))
/D[u, x]]}, Simp[C*PolyLog[2, 1 - u], x] /; FreeQ[C, x]] /; IntegerQ[m] &&
PolyQ[Pq, x] && RationalFunctionQ[u, x] && LeQ[RationalFunctionExponents[u,
 x][[2]], Expon[Pq, x]]
```

Rule 2470

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_))^(p_.)]*(b_.))/((f_) + (g_.)
*(x_)^2), x_Symbol] :> With[{u = IntHide[1/(f + g*x^2), x]}, Simp[u*(a + b*
Log[c*(d + e*x^n)^p]), x] - Dist[b*e*n*p, Int[(u*x^(n - 1))/(d + e*x^n), x]
, x]] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && IntegerQ[n]
```

Rule 4848

```
Int[((a_.) + ArcTan[(c_.)*(x_)]*(b_.))/(x_), x_Symbol] :> Simp[a*Log[x], x]
 + (Dist[(I*b)/2, Int[Log[1 - I*c*x]/x, x], x] - Dist[(I*b)/2, Int[Log[1 +
I*c*x]/x, x], x]) /; FreeQ[{a, b, c}, x]
```

Rule 4853

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcCot[c*x])^p)/(d*(m + 1)), x] + Dist[(b*c*p
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcCot[c*x])^(p - 1))/(1 + c^2*x^2
), x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[p, 0] && (EqQ[p, 1] || Integ
erQ[m]) && NeQ[m, -1]
```

Rule 4856

```
Int[((a_.) + ArcTan[(c_.)*(x_)]*(b_.))/((d_) + (e_.)*(x_)), x_Symbol] :> -S
imp[((a + b*ArcTan[c*x])*Log[2/(1 - I*c*x)])/e, x] + (Dist[(b*c)/e, Int[Log
[2/(1 - I*c*x)]/(1 + c^2*x^2), x], x] - Dist[(b*c)/e, Int[Log[(2*c*(d + e*x
))/((c*d + I*e)*(1 - I*c*x))]/(1 + c^2*x^2), x], x] + Simp[((a + b*ArcTan[c
```

```
*x])*Log[(2*c*(d + e*x))/((c*d + I*e)*(1 - I*c*x))])/e, x]) /; FreeQ[{a, b,
 c, d, e}, x] && NeQ[c^2*d^2 + e^2, 0]
```

Rule 4876

```
Int[((a_.) + ArcTan[(c_.)*(x_)]*(b_.))^(p_.)*((f_.)*(x_))^(m_.)*((d_) + (e_
.)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*ArcTan[c*x])^p, (f*
x)^m*(d + e*x)^q, x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && IGtQ[p, 0] &
& IntegerQ[q] && (GtQ[q, 0] || NeQ[a, 0] || IntegerQ[m])
```

Rule 4909

```
Int[ArcCot[(c_.)*(x_)]/((d_.) + (e_.)*(x_)^2), x_Symbol] :> Dist[I/2, Int[L
og[1 - I/(c*x)]/(d + e*x^2), x], x] - Dist[I/2, Int[Log[1 + I/(c*x)]/(d + e
*x^2), x], x] /; FreeQ[{c, d, e}, x]
```

Rule 4919

```
Int[(((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)*((f_.)*(x_))^(m_))/((d_) + (e
_.)*(x_)^2), x_Symbol] :> Dist[1/d, Int[(f*x)^m*(a + b*ArcCot[c*x])^p, x],
x] - Dist[e/(d*f^2), Int[((f*x)^(m + 2)*(a + b*ArcCot[c*x])^p)/(d + e*x^2),
 x], x] /; FreeQ[{a, b, c, d, e, f}, x] && GtQ[p, 0] && LtQ[m, -1]
```

Rule 6688

```
Int[u_, x_Symbol] :> With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; Simpl
erIntegrandQ[v, u, x]]
```

Rubi steps

$$\int \frac{\cot^{-1}(cx)}{x^2\left(1+x^2\right)}\,dx = \int \frac{\cot^{-1}(cx)}{x^2}\,dx - \int \frac{\cot^{-1}(cx)}{1+x^2}\,dx$$

$$= -\frac{\cot^{-1}(cx)}{x} - \frac{1}{2}i\int \frac{\log\left(1-\frac{i}{cx}\right)}{1+x^2}\,dx + \frac{1}{2}i\int \frac{\log\left(1+\frac{i}{cx}\right)}{1+x^2}\,dx - c\int \frac{1}{x\left(1+c^2x^2\right)}\,dx$$

$$= -\frac{\cot^{-1}(cx)}{x} - \frac{1}{2}i\tan^{-1}(x)\log\left(1-\frac{i}{cx}\right) + \frac{1}{2}i\tan^{-1}(x)\log\left(1+\frac{i}{cx}\right) - \frac{\int \frac{\tan^{-1}(x)}{\left(1-\frac{i}{cx}\right)x^2}\,dx}{2c} - \frac{\int \frac{\tan^{-1}(x}{\left(1+\frac{i}{cx}\right)}}{2c}$$

$$= -\frac{\cot^{-1}(cx)}{x} - \frac{1}{2}i\tan^{-1}(x)\log\left(1-\frac{i}{cx}\right) + \frac{1}{2}i\tan^{-1}(x)\log\left(1+\frac{i}{cx}\right) - \frac{\int \frac{c\tan^{-1}(x)}{x(-i+cx)}\,dx}{2c} - \frac{\int \frac{c\tan^{-1}}{x(i+cx}}{2c}$$

$$= -\frac{\cot^{-1}(cx)}{x} - \frac{1}{2}i\tan^{-1}(x)\log\left(1-\frac{i}{cx}\right) + \frac{1}{2}i\tan^{-1}(x)\log\left(1+\frac{i}{cx}\right) - c\log(x) + \frac{1}{2}c\log\left(1+c^2\right.$$

$$= -\frac{\cot^{-1}(cx)}{x} - \frac{1}{2}i\tan^{-1}(x)\log\left(1-\frac{i}{cx}\right) + \frac{1}{2}i\tan^{-1}(x)\log\left(1+\frac{i}{cx}\right) - c\log(x) + \frac{1}{2}c\log\left(1+c^2\right.$$

$$= -\frac{\cot^{-1}(cx)}{x} - \frac{1}{2}i\tan^{-1}(x)\log\left(1-\frac{i}{cx}\right) + \frac{1}{2}i\tan^{-1}(x)\log\left(1+\frac{i}{cx}\right) - c\log(x) + \frac{1}{2}c\log\left(1+c^2\right.$$

$$= -\frac{\cot^{-1}(cx)}{x} - \frac{1}{2}i\tan^{-1}(x)\log\left(1-\frac{i}{cx}\right) + \frac{1}{2}i\tan^{-1}(x)\log\left(1+\frac{i}{cx}\right) - c\log(x) + \frac{1}{2}i\tan^{-1}(x)\,\mathrm{lo}$$

$$= -\frac{\cot^{-1}(cx)}{x} - \frac{1}{2}i\tan^{-1}(x)\log\left(1-\frac{i}{cx}\right) + \frac{1}{2}i\tan^{-1}(x)\log\left(1+\frac{i}{cx}\right) - c\log(x) + \frac{1}{2}i\tan^{-1}(x)\,\mathrm{lo}$$

Mathematica [A] time = 0.10, size = 348, normalized size = 1.64

$$\frac{1}{2}c\log\left(c^2x^2+1\right)+\frac{1}{4}\text{Li}_2\left(\frac{ic(i-x)}{1-c}\right)-\frac{1}{4}\text{Li}_2\left(-\frac{ic(i-x)}{c+1}\right)+\frac{1}{4}\text{Li}_2\left(\frac{ic(x+i)}{1-c}\right)-\frac{1}{4}\text{Li}_2\left(-\frac{ic(x+i)}{c+1}\right)-c\log(x)+\frac{1}{4}\log(-$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[ArcCot[c*x]/(x^2*(1 + x^2)),x]
```

```
[Out] -(ArcCot[c*x]/x) - c*Log[x] + (Log[I - x]*Log[((-I)*(I - c*x))/(1 - c)])/4
- (Log[I + x]*Log[((-I)*(I - c*x))/(1 + c)])/4 - (Log[I - x]*Log[-((I - c*x
)/(c*x))]])/4 + (Log[I + x]*Log[-((I - c*x)/(c*x))]])/4 + (Log[I + x]*Log[((-
I)*(I + c*x))/(1 - c)])/4 - (Log[I - x]*Log[((-I)*(I + c*x))/(1 + c)])/4 +
(Log[I - x]*Log[(I + c*x)/(c*x)])/4 - (Log[I + x]*Log[(I + c*x)/(c*x)])/4 +
 (c*Log[1 + c^2*x^2])/2 + PolyLog[2, (I*c*(I - x))/(1 - c)]/4 - PolyLog[2,
((-I)*c*(I - x))/(1 + c)]/4 + PolyLog[2, (I*c*(I + x))/(1 - c)]/4 - PolyLog
[2, ((-I)*c*(I + x))/(1 + c)]/4
```

fricas [F] time = 0.49, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\operatorname{arccot}(cx)}{x^4+x^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(c*x)/x^2/(x^2+1),x, algorithm="fricas")
```

```
[Out] integral(arccot(c*x)/(x^4 + x^2), x)
```

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

$$\int \frac{\operatorname{arccot}(cx)}{\left(x^2+1\right)x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(c*x)/x^2/(x^2+1),x, algorithm="giac")
```

```
[Out] integrate(arccot(c*x)/((x^2 + 1)*x^2), x)
```

maple [A] time = 0.08, size = 271, normalized size = 1.28

$$-\operatorname{arccot}(cx)\arctan(x)-\frac{\operatorname{arccot}(cx)}{x}+\frac{c\ln\left(c^2x^2+1\right)}{2}-c\ln(x)+\frac{ic\ln\left(1-\frac{(1+c)(ix+1)^2}{(x^2+1)(-1+c)}\right)\arctan(x)}{-2+2c}-\frac{i\ln\left(1-\frac{(1+c)(}{(x^2+1)}\right.}{2(-}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arccot(c*x)/x^2/(x^2+1),x)
```

```
[Out] -arccot(c*x)*arctan(x)-arccot(c*x)/x+1/2*c*ln(c^2*x^2+1)-c*ln(x)+1/2*I*c/(-
1+c)*ln(1-(1+c)*(1+I*x)^2/(x^2+1)/(-1+c))*arctan(x)-1/2*I/(-1+c)*ln(1-(1+c)
*(1+I*x)^2/(x^2+1)/(-1+c))*arctan(x)+1/2*c/(-1+c)*arctan(x)^2+1/4*c/(-1+c)*
polylog(2,(1+c)*(1+I*x)^2/(x^2+1)/(-1+c))-1/2/(-1+c)*arctan(x)^2-1/4/(-1+c)
*polylog(2,(1+c)*(1+I*x)^2/(x^2+1)/(-1+c))-1/2*I*arctan(x)*ln(1-(-1+c)*(1+I
*x)^2/(x^2+1)/(1+c))-1/2*arctan(x)^2-1/4*polylog(2,(-1+c)*(1+I*x)^2/(x^2+1)
/(1+c))
```

maxima [A] time = 0.45, size = 183, normalized size = 0.86

$$-\left(\frac{1}{x}+\arctan(x)\right)\operatorname{arccot}(cx)-\frac{1}{2}\arctan(cx)\arctan(x)+\frac{1}{2}\arctan(x)\arctan\left(\frac{cx}{c-1},-\frac{1}{c-1}\right)+\frac{1}{2}c\log\left(c^2x^2+1\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(c*x)/x^2/(x^2+1),x, algorithm="maxima")
```

```
[Out] -(1/x + arctan(x))*arccot(c*x) - 1/2*arctan(c*x)*arctan(x) + 1/2*arctan(x)*
arctan2(c*x/(c - 1), -1/(c - 1)) + 1/2*c*log(c^2*x^2 + 1) - c*log(x) - 1/8*
log(x^2 + 1)*log((c^2*x^2 + 1)/(c^2 + 2*c + 1)) + 1/8*log(x^2 + 1)*log((c^2
*x^2 + 1)/(c^2 - 2*c + 1)) - 1/4*dilog((I*c*x + c)/(c + 1)) - 1/4*dilog(-(I
*c*x - c)/(c + 1)) + 1/4*dilog((I*c*x + c)/(c - 1)) + 1/4*dilog(-(I*c*x - c
)/(c - 1))
```

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

$$\int \frac{\operatorname{acot}(c\,x)}{x^2\,\left(x^2+1\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(acot(c*x)/(x^2*(x^2 + 1)),x)
```

```
[Out] int(acot(c*x)/(x^2*(x^2 + 1)), x)
```

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

$$\int \frac{\operatorname{acot}(cx)}{x^2\left(x^2+1\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(acot(c*x)/x**2/(x**2+1),x)
```

```
[Out] Integral(acot(c*x)/(x**2*(x**2 + 1)), x)
```

3.51 $\int \frac{1}{(1+x^2)\cot^{-1}(x)}\,dx$

Optimal. Leaf size=5

$$-\log\left(\cot^{-1}(x)\right)$$

```
[Out] -ln(arccot(x))
```

Rubi [A] time = 0.02, antiderivative size = 5, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.083, Rules used = {4883}

$$-\log\left(\cot^{-1}(x)\right)$$

Antiderivative was successfully verified.

```
[In] Int[1/((1 + x^2)*ArcCot[x]),x]
```

```
[Out] -Log[ArcCot[x]]
```

Rule 4883

```
Int[1/(((a_.) + ArcCot[(c_.)*(x_)]*(b_.))*((d_) + (e_.)*(x_)^2)), x_Symbol]
 :> -Simp[Log[RemoveContent[a + b*ArcCot[c*x], x]]/(b*c*d), x] /; FreeQ[{a,
 b, c, d, e}, x] && EqQ[e, c^2*d]
```

Rubi steps

$$\int \frac{1}{\left(1+x^2\right)\cot^{-1}(x)}\,dx=-\log\left(\cot^{-1}(x)\right)$$

Mathematica [A] time = 0.03, size = 5, normalized size = 1.00

$$-\log\left(\cot^{-1}(x)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[1/((1 + x^2)*ArcCot[x]),x]
```

```
[Out] -Log[ArcCot[x]]
```

fricas [A] time = 0.46, size = 5, normalized size = 1.00

$$-\log\left(\operatorname{arccot}(x)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(x^2+1)/arccot(x),x, algorithm="fricas")
```

```
[Out] -log(arccot(x))
```

giac [A] time = 0.12, size = 8, normalized size = 1.60

$$-\log\left(\left|\arctan\left(\frac{1}{x}\right)\right|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(x^2+1)/arccot(x),x, algorithm="giac")
```

```
[Out] -log(abs(arctan(1/x)))
```

maple [A] time = 0.04, size = 6, normalized size = 1.20

$$-\ln(\operatorname{arccot}(x))$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(x^2+1)/arccot(x),x)
[Out] -ln(arccot(x))
```

maxima [A] time = 0.32, size = 5, normalized size = 1.00

$$-\log(\operatorname{arccot}(x))$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(x^2+1)/arccot(x),x, algorithm="maxima")
[Out] -log(arccot(x))
```

mupad [B] time = 0.59, size = 5, normalized size = 1.00

$$-\ln(\operatorname{acot}(x))$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(acot(x)*(x^2 + 1)),x)
[Out] -log(acot(x))
```

sympy [A] time = 0.24, size = 5, normalized size = 1.00

$$-\log(\operatorname{acot}(x))$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(x**2+1)/acot(x),x)
[Out] -log(acot(x))
```

3.52 $\int \frac{\cot^{-1}(x)^n}{1+x^2} dx$

Optimal. Leaf size=13

$$-\frac{\cot^{-1}(x)^{n+1}}{n+1}$$

```
[Out] -arccot(x)^(1+n)/(1+n)
```

Rubi [A] time = 0.02, antiderivative size = 13, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.083, Rules used = {4885}

$$-\frac{\cot^{-1}(x)^{n+1}}{n+1}$$

Antiderivative was successfully verified.

```
[In] Int[ArcCot[x]^n/(1 + x^2),x]
[Out] -(ArcCot[x]^(1 + n)/(1 + n))
```

Rule 4885

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)^2), x_Symbo
l] :> -Simp[(a + b*ArcCot[c*x])^(p + 1)/(b*c*d*(p + 1)), x] /; FreeQ[{a, b,
 c, d, e, p}, x] && EqQ[e, c^2*d] && NeQ[p, -1]
```

Rubi steps

$$\int \frac{\cot^{-1}(x)^n}{1+x^2} dx = -\frac{\cot^{-1}(x)^{1+n}}{1+n}$$

Mathematica [A] time = 0.01, size = 13, normalized size = 1.00

$$-\frac{\cot^{-1}(x)^{n+1}}{n+1}$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcCot[x]^n/(1 + x^2),x]
[Out] -(ArcCot[x]^(1 + n)/(1 + n))
```

fricas [A] time = 0.46, size = 13, normalized size = 1.00

$$-\frac{\operatorname{arccot}(x)^n \operatorname{arccot}(x)}{n+1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(x)^n/(x^2+1),x, algorithm="fricas")
[Out] -arccot(x)^n*arccot(x)/(n + 1)
```

giac [A] time = 0.12, size = 15, normalized size = 1.15

$$-\frac{\arctan\left(\frac{1}{x}\right)^{n+1}}{n+1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(x)^n/(x^2+1),x, algorithm="giac")
```

```
[Out] -arctan(1/x)^(n + 1)/(n + 1)
```

maple [A] time = 0.04, size = 14, normalized size = 1.08

$$-\frac{\operatorname{arccot}(x)^{1+n}}{1+n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arccot(x)^n/(x^2+1),x)
```

```
[Out] -arccot(x)^(1+n)/(1+n)
```

maxima [A] time = 0.32, size = 13, normalized size = 1.00

$$-\frac{\operatorname{arccot}(x)^{n+1}}{n+1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(x)^n/(x^2+1),x, algorithm="maxima")
```

```
[Out] -arccot(x)^(n + 1)/(n + 1)
```

mupad [B] time = 0.61, size = 13, normalized size = 1.00

$$-\frac{\operatorname{acot}(x)^{n+1}}{n+1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(acot(x)^n/(x^2 + 1),x)
```

```
[Out] -acot(x)^(n + 1)/(n + 1)
```

sympy [A] time = 1.45, size = 17, normalized size = 1.31

$$-\begin{cases} \frac{\operatorname{acot}^{n+1}(x)}{n+1} & \text{for}\: n \neq -1 \\ \log(\operatorname{acot}(x)) & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(acot(x)**n/(x**2+1),x)
```

```
[Out] -Piecewise((acot(x)**(n + 1)/(n + 1), Ne(n, -1)), (log(acot(x)), True))
```

3.53 $\int \left(c + dx^2\right)^4 \cot^{-1}(ax)\, dx$

Optimal. Leaf size=244

$$\frac{d^3x^6\left(36a^2c - 7d\right)}{378a^3} + \frac{d^2x^4\left(378a^4c^2 - 180a^2cd + 35d^2\right)}{1260a^5} + \frac{dx^2\left(420a^6c^3 - 378a^4c^2d + 180a^2cd^2 - 35d^3\right)}{630a^7} + \frac{\left(315a^8c\right.}{}$$

```
[Out] 1/630*d*(420*a^6*c^3-378*a^4*c^2*d+180*a^2*c*d^2-35*d^3)*x^2/a^7+1/1260*d^2
*(378*a^4*c^2-180*a^2*c*d+35*d^2)*x^4/a^5+1/378*(36*a^2*c-7*d)*d^3*x^6/a^3+
1/72*d^4*x^8/a+c^4*x*arccot(a*x)+4/3*c^3*d*x^3*arccot(a*x)+6/5*c^2*d^2*x^5*
arccot(a*x)+4/7*c*d^3*x^7*arccot(a*x)+1/9*d^4*x^9*arccot(a*x)+1/630*(315*a^
8*c^4-420*a^6*c^3*d+378*a^4*c^2*d^2-180*a^2*c*d^3+35*d^4)*ln(a^2*x^2+1)/a^9
```

Rubi [A] time = 0.18, antiderivative size = 244, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}} = 0.286$, Rules used = {194, 4913, 1810, 260}

$$\frac{d^2x^4\left(378a^4c^2 - 180a^2cd + 35d^2\right)}{1260a^5} + \frac{dx^2\left(-378a^4c^2d + 420a^6c^3 + 180a^2cd^2 - 35d^3\right)}{630a^7} + \frac{\left(378a^4c^2d^2 - 420a^6c^3d + \right.}{}$$

Antiderivative was successfully verified.

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

```
[Out] (d*(420*a^6*c^3 - 378*a^4*c^2*d + 180*a^2*c*d^2 - 35*d^3)*x^2)/(630*a^7) +
(d^2*(378*a^4*c^2 - 180*a^2*c*d + 35*d^2)*x^4)/(1260*a^5) + ((36*a^2*c - 7*
d)*d^3*x^6)/(378*a^3) + (d^4*x^8)/(72*a) + c^4*x*ArcCot[a*x] + (4*c^3*d*x^3
*ArcCot[a*x])/3 + (6*c^2*d^2*x^5*ArcCot[a*x])/5 + (4*c*d^3*x^7*ArcCot[a*x])
/7 + (d^4*x^9*ArcCot[a*x])/9 + ((315*a^8*c^4 - 420*a^6*c^3*d + 378*a^4*c^2*
d^2 - 180*a^2*c*d^3 + 35*d^4)*Log[1 + a^2*x^2])/(630*a^9)
```

Rule 194

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Int[ExpandIntegrand[(a + b*
x^n)^p, x], x] /; FreeQ[{a, b}, x] && IGtQ[n, 0] && IGtQ[p, 0]
```

Rule 260

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

Rule 1810

```
Int[(Pq_)*((a_) + (b_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[Pq*
(a + b*x^2)^p, x], x] /; FreeQ[{a, b}, x] && PolyQ[Pq, x] && IGtQ[p, -2]
```

Rule 4913

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))*((d_.) + (e_.)*(x_)^2)^(q_.), x_Symb
ol] :> With[{u = IntHide[(d + e*x^2)^q, x]}, Dist[a + b*ArcCot[c*x], u, x]
+ Dist[b*c, Int[u/(1 + c^2*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && (I
ntegerQ[q] || ILtQ[q + 1/2, 0])
```

Rubi steps

$$\int \left(c+dx^2\right)^4 \cot^{-1}(ax)\,dx = c^4x\cot^{-1}(ax)+\frac{4}{3}c^3dx^3\cot^{-1}(ax)+\frac{6}{5}c^2d^2x^5\cot^{-1}(ax)+\frac{4}{7}cd^3x^7\cot^{-1}(ax)+\frac{1}{9}d^4x^9$$

$$= c^4x\cot^{-1}(ax)+\frac{4}{3}c^3dx^3\cot^{-1}(ax)+\frac{6}{5}c^2d^2x^5\cot^{-1}(ax)+\frac{4}{7}cd^3x^7\cot^{-1}(ax)+\frac{1}{9}d^4x^9$$

$$= \frac{d\left(420a^6c^3-378a^4c^2d+180a^2cd^2-35d^3\right)x^2}{630a^7}+\frac{d^2\left(378a^4c^2-180a^2cd+35d^2\right)x^4}{1260a^5}$$

$$= \frac{d\left(420a^6c^3-378a^4c^2d+180a^2cd^2-35d^3\right)x^2}{630a^7}+\frac{d^2\left(378a^4c^2-180a^2cd+35d^2\right)x^4}{1260a^5}$$

Mathematica [A] time = 0.19, size = 212, normalized size = 0.87

$$\frac{24a^9x\cot^{-1}(ax)\left(315c^4+420c^3dx^2+378c^2d^2x^4+180cd^3x^6+35d^4x^8\right)+a^2dx^2\left(3a^6\left(1680c^3+756c^2dx^2+240cd\right.\right.}{}$$

Antiderivative was successfully verified.

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

```
[Out] (a^2*d*x^2*(-420*d^3 + 30*a^2*d^2*(72*c + 7*d*x^2) - 4*a^4*d*(1134*c^2 + 27
0*c*d*x^2 + 35*d^2*x^4) + 3*a^6*(1680*c^3 + 756*c^2*d*x^2 + 240*c*d^2*x^4 +
 35*d^3*x^6)) + 24*a^9*x*(315*c^4 + 420*c^3*d*x^2 + 378*c^2*d^2*x^4 + 180*c
*d^3*x^6 + 35*d^4*x^8)*ArcCot[a*x] + 12*(315*a^8*c^4 - 420*a^6*c^3*d + 378*
a^4*c^2*d^2 - 180*a^2*c*d^3 + 35*d^4)*Log[1 + a^2*x^2])/(7560*a^9)
```

fricas [A] time = 0.49, size = 237, normalized size = 0.97

$$\frac{105\,a^8d^4x^8+20\left(36\,a^8cd^3-7\,a^6d^4\right)x^6+6\left(378\,a^8c^2d^2-180\,a^6cd^3+35\,a^4d^4\right)x^4+12\left(420\,a^8c^3d-378\,a^6c^2d^2+1\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/7560*(105*a^8*d^4*x^8 + 20*(36*a^8*c*d^3 - 7*a^6*d^4)*x^6 + 6*(378*a^8*c^
2*d^2 - 180*a^6*c*d^3 + 35*a^4*d^4)*x^4 + 12*(420*a^8*c^3*d - 378*a^6*c^2*d
^2 + 180*a^4*c*d^3 - 35*a^2*d^4)*x^2 + 24*(35*a^9*d^4*x^9 + 180*a^9*c*d^3*x
^7 + 378*a^9*c^2*d^2*x^5 + 420*a^9*c^3*d*x^3 + 315*a^9*c^4*x)*arccot(a*x) +
 12*(315*a^8*c^4 - 420*a^6*c^3*d + 378*a^4*c^2*d^2 - 180*a^2*c*d^3 + 35*d^4
)*log(a^2*x^2 + 1))/a^9
```

giac [A] time = 0.15, size = 347, normalized size = 1.42

$$\frac{1}{7560}\left(\frac{24\left(35\,d^4+\frac{180\,cd^3}{x^2}+\frac{378\,c^2d^2}{x^4}+\frac{420\,c^3d}{x^6}+\frac{315\,c^4}{x^8}\right)x^9\arctan\left(\frac{1}{ax}\right)}{a}+\frac{\left(105\,d^4+\frac{720\,cd^3}{x^2}+\frac{2268\,c^2d^2}{x^4}-\frac{140\,d^4}{a^2x^2}+\frac{5040\,c^3}{x^6}\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/7560*(24*(35*d^4 + 180*c*d^3/x^2 + 378*c^2*d^2/x^4 + 420*c^3*d/x^6 + 315*
c^4/x^8)*x^9*arctan(1/(a*x))/a + (105*d^4 + 720*c*d^3/x^2 + 2268*c^2*d^2/x^
4 - 140*d^4/(a^2*x^2) + 5040*c^3*d/x^6 - 1080*c*d^3/(a^2*x^4) + 7875*c^4/x^
8 - 4536*c^2*d^2/(a^2*x^6) + 210*d^4/(a^4*x^4) - 10500*c^3*d/(a^2*x^8) + 21
60*c*d^3/(a^4*x^6) + 9450*c^2*d^2/(a^4*x^8) - 420*d^4/(a^6*x^6) - 4500*c*d^
```

```
3/(a^6*x^8) + 875*d^4/(a^8*x^8))*x^8/a^2 + 12*(315*a^8*c^4 - 420*a^6*c^3*d
+ 378*a^4*c^2*d^2 - 180*a^2*c*d^3 + 35*d^4)*log(1/(a^2*x^2) + 1)/a^10 - 12*
(315*a^8*c^4 - 420*a^6*c^3*d + 378*a^4*c^2*d^2 - 180*a^2*c*d^3 + 35*d^4)*lo
g(1/(a^2*x^2))/a^10)*a
```

maple [A] time = 0.04, size = 279, normalized size = 1.14

$$\frac{d^4x^9\operatorname{arccot}(ax)}{9}+\frac{4c\,d^3x^7\operatorname{arccot}(ax)}{7}+\frac{6c^2d^2x^5\operatorname{arccot}(ax)}{5}+\frac{4c^3d\,x^3\operatorname{arccot}(ax)}{3}+c^4x\operatorname{arccot}(ax)+\frac{2c^3d\,x^2}{3a}+\frac{3c^2d}{10}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/9*d^4*x^9*arccot(a*x)+4/7*c*d^3*x^7*arccot(a*x)+6/5*c^2*d^2*x^5*arccot(a*
x)+4/3*c^3*d*x^3*arccot(a*x)+c^4*x*arccot(a*x)+2/3/a*c^3*d*x^2+3/10/a*c^2*d
^2*x^4+2/21/a*c*d^3*x^6-3/5/a^3*c^2*d^2*x^2+1/72*d^4*x^8/a-1/7/a^3*x^4*c*d^
3-1/54/a^3*d^4*x^6+2/7/a^5*x^2*c*d^3+1/36/a^5*d^4*x^4-1/18/a^7*x^2*d^4+1/2/
a*ln(a^2*x^2+1)*c^4-2/3/a^3*ln(a^2*x^2+1)*c^3*d+3/5/a^5*ln(a^2*x^2+1)*c^2*d
^2-2/7/a^7*ln(a^2*x^2+1)*c*d^3+1/18/a^9*ln(a^2*x^2+1)*d^4
```

maxima [A] time = 0.32, size = 226, normalized size = 0.93

$$\frac{1}{7560}a\left(\frac{105\,a^6d^4x^8+20\left(36\,a^6cd^3-7\,a^4d^4\right)x^6+6\left(378\,a^6c^2d^2-180\,a^4cd^3+35\,a^2d^4\right)x^4+12\left(420\,a^6c^3d-378\right.}{a^8}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/7560*a*((105*a^6*d^4*x^8 + 20*(36*a^6*c*d^3 - 7*a^4*d^4)*x^6 + 6*(378*a^6
*c^2*d^2 - 180*a^4*c*d^3 + 35*a^2*d^4)*x^4 + 12*(420*a^6*c^3*d - 378*a^4*c^
2*d^2 + 180*a^2*c*d^3 - 35*d^4)*x^2)/a^8 + 12*(315*a^8*c^4 - 420*a^6*c^3*d
+ 378*a^4*c^2*d^2 - 180*a^2*c*d^3 + 35*d^4)*log(a^2*x^2 + 1)/a^10) + 1/315*
(35*d^4*x^9 + 180*c*d^3*x^7 + 378*c^2*d^2*x^5 + 420*c^3*d*x^3 + 315*c^4*x)*
arccot(a*x)
```

mupad [B] time = 0.22, size = 234, normalized size = 0.96

$$\operatorname{acot}(a\,x)\left(c^4\,x+\frac{4\,c^3\,d\,x^3}{3}+\frac{6\,c^2\,d^2\,x^5}{5}+\frac{4\,c\,d^3\,x^7}{7}+\frac{d^4\,x^9}{9}\right)-x^2\left(\frac{\frac{\frac{d^4}{9\,a^3}-\frac{4\,c\,d^3}{7\,a}}{a^2}+\frac{6\,c^2\,d^2}{5\,a}}{2\,a^2}-\frac{2\,c^3\,d}{3\,a}\right)-x^6\left(\frac{d^4}{54\,a^3}-\frac{2\,c\,d}{21\,a}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] acot(a*x)*(c^4*x + (d^4*x^9)/9 + (4*c^3*d*x^3)/3 + (4*c*d^3*x^7)/7 + (6*c^2
*d^2*x^5)/5) - x^2*(((d^4/(9*a^3) - (4*c*d^3)/(7*a))/a^2 + (6*c^2*d^2)/(5*a
))/(2*a^2) - (2*c^3*d)/(3*a)) - x^6*(d^4/(54*a^3) - (2*c*d^3)/(21*a)) + x^4
*((d^4/(9*a^3) - (4*c*d^3)/(7*a))/(4*a^2) + (3*c^2*d^2)/(10*a)) + (log(a^2*
x^2 + 1)*(35*d^4 + 315*a^8*c^4 - 180*a^2*c*d^3 - 420*a^6*c^3*d + 378*a^4*c^
2*d^2))/(630*a^9) + (d^4*x^8)/(72*a)
```

sympy [A] time = 4.36, size = 367, normalized size = 1.50

$$\begin{cases} c^4x\operatorname{acot}(ax)+\frac{4c^3dx^3\operatorname{acot}(ax)}{3}+\frac{6c^2d^2x^5\operatorname{acot}(ax)}{5}+\frac{4cd^3x^7\operatorname{acot}(ax)}{7}+\frac{d^4x^9\operatorname{acot}(ax)}{9}+\frac{c^4\log\left(x^2+\frac{1}{a^2}\right)}{2a}+\frac{2c^3dx^2}{3a}+\frac{3c^2d^2x^4}{10a}+ \\ \frac{\pi\left(c^4x+\frac{4c^3dx^3}{3}+\frac{6c^2d^2x^5}{5}+\frac{4cd^3x^7}{7}+\frac{d^4x^9}{9}\right)}{2} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Piecewise((c**4*x*acot(a*x) + 4*c**3*d*x**3*acot(a*x)/3 + 6*c**2*d**2*x**5*
acot(a*x)/5 + 4*c*d**3*x**7*acot(a*x)/7 + d**4*x**9*acot(a*x)/9 + c**4*log(
x**2 + a**(-2))/(2*a) + 2*c**3*d*x**2/(3*a) + 3*c**2*d**2*x**4/(10*a) + 2*c
*d**3*x**6/(21*a) + d**4*x**8/(72*a) - 2*c**3*d*log(x**2 + a**(-2))/(3*a**3
) - 3*c**2*d**2*x**2/(5*a**3) - c*d**3*x**4/(7*a**3) - d**4*x**6/(54*a**3)
+ 3*c**2*d**2*log(x**2 + a**(-2))/(5*a**5) + 2*c*d**3*x**2/(7*a**5) + d**4*
x**4/(36*a**5) - 2*c*d**3*log(x**2 + a**(-2))/(7*a**7) - d**4*x**2/(18*a**7
) + d**4*log(x**2 + a**(-2))/(18*a**9), Ne(a, 0)), (pi*(c**4*x + 4*c**3*d*x
**3/3 + 6*c**2*d**2*x**5/5 + 4*c*d**3*x**7/7 + d**4*x**9/9)/2, True))
```

3.54 $\int \left(c+dx^2\right)^3 \cot^{-1}(ax)\,dx$

Optimal. Leaf size=168

$$\frac{d^2x^4\left(21a^2c-5d\right)}{140a^3}+\frac{dx^2\left(35a^4c^2-21a^2cd+5d^2\right)}{70a^5}+\frac{\left(35a^6c^3-35a^4c^2d+21a^2cd^2-5d^3\right)\log\left(a^2x^2+1\right)}{70a^7}+c^3x\cot$$

```
[Out] 1/70*d*(35*a^4*c^2-21*a^2*c*d+5*d^2)*x^2/a^5+1/140*(21*a^2*c-5*d)*d^2*x^4/a
^3+1/42*d^3*x^6/a+c^3*x*arccot(a*x)+c^2*d*x^3*arccot(a*x)+3/5*c*d^2*x^5*arc
cot(a*x)+1/7*d^3*x^7*arccot(a*x)+1/70*(35*a^6*c^3-35*a^4*c^2*d+21*a^2*c*d^2
-5*d^3)*ln(a^2*x^2+1)/a^7
```

Rubi [A] time = 0.12, antiderivative size = 168, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.286, Rules used = {194, 4913, 1810, 260}

$$\frac{dx^2\left(35a^4c^2-21a^2cd+5d^2\right)}{70a^5}+\frac{\left(-35a^4c^2d+35a^6c^3+21a^2cd^2-5d^3\right)\log\left(a^2x^2+1\right)}{70a^7}+\frac{d^2x^4\left(21a^2c-5d\right)}{140a^3}+c^2dx^3$$

Antiderivative was successfully verified.

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

```
[Out] (d*(35*a^4*c^2 - 21*a^2*c*d + 5*d^2)*x^2)/(70*a^5) + ((21*a^2*c - 5*d)*d^2*
x^4)/(140*a^3) + (d^3*x^6)/(42*a) + c^3*x*ArcCot[a*x] + c^2*d*x^3*ArcCot[a*
x] + (3*c*d^2*x^5*ArcCot[a*x])/5 + (d^3*x^7*ArcCot[a*x])/7 + ((35*a^6*c^3 -
 35*a^4*c^2*d + 21*a^2*c*d^2 - 5*d^3)*Log[1 + a^2*x^2])/(70*a^7)
```

Rule 194

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Int[ExpandIntegrand[(a + b*
x^n)^p, x], x] /; FreeQ[{a, b}, x] && IGtQ[n, 0] && IGtQ[p, 0]
```

Rule 260

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

Rule 1810

```
Int[(Pq_)*((a_) + (b_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[Pq*
(a + b*x^2)^p, x], x] /; FreeQ[{a, b}, x] && PolyQ[Pq, x] && IGtQ[p, -2]
```

Rule 4913

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))*((d_.) + (e_.)*(x_)^2)^(q_.), x_Symb
ol] :> With[{u = IntHide[(d + e*x^2)^q, x]}, Dist[a + b*ArcCot[c*x], u, x]
+ Dist[b*c, Int[u/(1 + c^2*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && (I
ntegerQ[q] || ILtQ[q + 1/2, 0])
```

Rubi steps

$$\int \left(c+dx^2\right)^3 \cot^{-1}(ax)\,dx = c^3x\cot^{-1}(ax)+c^2dx^3\cot^{-1}(ax)+\frac{3}{5}cd^2x^5\cot^{-1}(ax)+\frac{1}{7}d^3x^7\cot^{-1}(ax)+a\int \frac{c^3x+}{}$$

$$= c^3x\cot^{-1}(ax)+c^2dx^3\cot^{-1}(ax)+\frac{3}{5}cd^2x^5\cot^{-1}(ax)+\frac{1}{7}d^3x^7\cot^{-1}(ax)+a\int\left(\frac{d\left(35\right.}{}\right.$$

$$= \frac{d\left(35a^4c^2-21a^2cd+5d^2\right)x^2}{70a^5}+\frac{\left(21a^2c-5d\right)d^2x^4}{140a^3}+\frac{d^3x^6}{42a}+c^3x\cot^{-1}(ax)+c^2dx^3\,\mathrm{c}$$

$$= \frac{d\left(35a^4c^2-21a^2cd+5d^2\right)x^2}{70a^5}+\frac{\left(21a^2c-5d\right)d^2x^4}{140a^3}+\frac{d^3x^6}{42a}+c^3x\cot^{-1}(ax)+c^2dx^3\,\mathrm{c}$$

Mathematica [A] time = 0.12, size = 149, normalized size = 0.89

$$\frac{12a^7x\cot^{-1}(ax)\left(35c^3+35c^2dx^2+21cd^2x^4+5d^3x^6\right)+a^2dx^2\left(a^4\left(210c^2+63cdx^2+10d^2x^4\right)-3a^2d\left(42c+5dx^2\right)\right.}{420a^7}$$

Antiderivative was successfully verified.

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

```
[Out] (a^2*d*x^2*(30*d^2 - 3*a^2*d*(42*c + 5*d*x^2) + a^4*(210*c^2 + 63*c*d*x^2 +
 10*d^2*x^4)) + 12*a^7*x*(35*c^3 + 35*c^2*d*x^2 + 21*c*d^2*x^4 + 5*d^3*x^6)
*ArcCot[a*x] + 6*(35*a^6*c^3 - 35*a^4*c^2*d + 21*a^2*c*d^2 - 5*d^3)*Log[1 +
 a^2*x^2])/(420*a^7)
```

fricas [A] time = 1.43, size = 167, normalized size = 0.99

$$\frac{10\,a^6d^3x^6+3\left(21\,a^6cd^2-5\,a^4d^3\right)x^4+6\left(35\,a^6c^2d-21\,a^4cd^2+5\,a^2d^3\right)x^2+12\left(5\,a^7d^3x^7+21\,a^7cd^2x^5+35\,a^7c^2dx\right.}{420\,a^7}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/420*(10*a^6*d^3*x^6 + 3*(21*a^6*c*d^2 - 5*a^4*d^3)*x^4 + 6*(35*a^6*c^2*d
- 21*a^4*c*d^2 + 5*a^2*d^3)*x^2 + 12*(5*a^7*d^3*x^7 + 21*a^7*c*d^2*x^5 + 35
*a^7*c^2*d*x^3 + 35*a^7*c^3*x)*arccot(a*x) + 6*(35*a^6*c^3 - 35*a^4*c^2*d +
 21*a^2*c*d^2 - 5*d^3)*log(a^2*x^2 + 1))/a^7
```

giac [A] time = 0.14, size = 252, normalized size = 1.50

$$\frac{1}{420}\left(\frac{12\left(5\,d^3+\frac{21\,cd^2}{x^2}+\frac{35\,c^2d}{x^4}+\frac{35\,c^3}{x^6}\right)x^7\arctan\left(\frac{1}{ax}\right)}{a}+\frac{\left(10\,d^3+\frac{63\,cd^2}{x^2}+\frac{210\,c^2d}{x^4}-\frac{15\,d^3}{a^2x^2}+\frac{385\,c^3}{x^6}-\frac{126\,cd^2}{a^2x^4}-\frac{385\,c^2d}{a^2x^6}+\right.}{a^2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/420*(12*(5*d^3 + 21*c*d^2/x^2 + 35*c^2*d/x^4 + 35*c^3/x^6)*x^7*arctan(1/(
a*x))/a + (10*d^3 + 63*c*d^2/x^2 + 210*c^2*d/x^4 - 15*d^3/(a^2*x^2) + 385*c
^3/x^6 - 126*c*d^2/(a^2*x^4) - 385*c^2*d/(a^2*x^6) + 30*d^3/(a^4*x^4) + 231
*c*d^2/(a^4*x^6) - 55*d^3/(a^6*x^6))*x^6/a^2 + 6*(35*a^6*c^3 - 35*a^4*c^2*d
 + 21*a^2*c*d^2 - 5*d^3)*log(1/(a^2*x^2) + 1)/a^8 - 6*(35*a^6*c^3 - 35*a^4*
c^2*d + 21*a^2*c*d^2 - 5*d^3)*log(1/(a^2*x^2))/a^8)*a
```

maple [A] time = 0.04, size = 191, normalized size = 1.14

$$\frac{d^3x^7\,\mathrm{arccot}\,(ax)}{7}+\frac{3c\,d^2x^5\,\mathrm{arccot}\,(ax)}{5}+c^2d\,x^3\,\mathrm{arccot}\,(ax)+c^3x\,\mathrm{arccot}\,(ax)+\frac{c^2d\,x^2}{2a}+\frac{3x^4c\,d^2}{20a}+\frac{d^3x^6}{42a}-\frac{3c\,d^2x^2}{10a^3}-\frac{d^3x^4}{28a^3}+$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/7*d^3*x^7*arccot(a*x)+3/5*c*d^2*x^5*arccot(a*x)+c^2*d*x^3*arccot(a*x)+c^3
*x*arccot(a*x)+1/2*c^2*d*x^2/a+3/20/a*x^4*c*d^2+1/42*d^3*x^6/a-3/10/a^3*c*d
^2*x^2-1/28/a^3*d^3*x^4+1/14/a^5*d^3*x^2+1/2*c^3*ln(a^2*x^2+1)/a-1/2/a^3*ln
(a^2*x^2+1)*c^2*d+3/10/a^5*ln(a^2*x^2+1)*c*d^2-1/14/a^7*ln(a^2*x^2+1)*d^3
```

maxima [A] time = 0.33, size = 159, normalized size = 0.95

$$\frac{1}{420}a\left(\frac{10\,a^4d^3x^6+3\left(21\,a^4cd^2-5\,a^2d^3\right)x^4+6\left(35\,a^4c^2d-21\,a^2cd^2+5\,d^3\right)x^2}{a^6}+\frac{6\left(35\,a^6c^3-35\,a^4c^2d+21\,a^2c\right.}{a^8}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/420*a*((10*a^4*d^3*x^6 + 3*(21*a^4*c*d^2 - 5*a^2*d^3)*x^4 + 6*(35*a^4*c^2
*d - 21*a^2*c*d^2 + 5*d^3)*x^2)/a^6 + 6*(35*a^6*c^3 - 35*a^4*c^2*d + 21*a^2
*c*d^2 - 5*d^3)*log(a^2*x^2 + 1)/a^8) + 1/35*(5*d^3*x^7 + 21*c*d^2*x^5 + 35
*c^2*d*x^3 + 35*c^3*x)*arccot(a*x)
```

mupad [B] time = 1.02, size = 190, normalized size = 1.13

$$c^3\,x\,\mathrm{acot}\left(a\,x\right)+\frac{d^3\,x^7\,\mathrm{acot}\left(a\,x\right)}{7}+\frac{c^3\,\ln\left(a^2\,x^2+1\right)}{2\,a}-\frac{d^3\,\ln\left(a^2\,x^2+1\right)}{14\,a^7}+\frac{d^3\,x^6}{42\,a}-\frac{d^3\,x^4}{28\,a^3}+\frac{d^3\,x^2}{14\,a^5}-\frac{c^2\,d\,\ln\left(a^2\,x^2+1\right)}{2\,a^3}+$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] c^3*x*acot(a*x) + (d^3*x^7*acot(a*x))/7 + (c^3*log(a^2*x^2 + 1))/(2*a) - (d
^3*log(a^2*x^2 + 1))/(14*a^7) + (d^3*x^6)/(42*a) - (d^3*x^4)/(28*a^3) + (d^
3*x^2)/(14*a^5) - (c^2*d*log(a^2*x^2 + 1))/(2*a^3) + (3*c*d^2*log(a^2*x^2 +
 1))/(10*a^5) + (c^2*d*x^2)/(2*a) + (3*c*d^2*x^4)/(20*a) - (3*c*d^2*x^2)/(1
0*a^3) + c^2*d*x^3*acot(a*x) + (3*c*d^2*x^5*acot(a*x))/5
```

sympy [A] time = 2.50, size = 243, normalized size = 1.45

$$\begin{cases} c^3x\,\mathrm{acot}\,(ax)+c^2dx^3\,\mathrm{acot}\,(ax)+\frac{3cd^2x^5\,\mathrm{acot}\,(ax)}{5}+\frac{d^3x^7\,\mathrm{acot}\,(ax)}{7}+\frac{c^3\log\left(x^2+\frac{1}{a^2}\right)}{2a}+\frac{c^2dx^2}{2a}+\frac{3cd^2x^4}{20a}+\frac{d^3x^6}{42a}-\frac{c^2d\log\left(x^2+\right.}{2a^3} \\ \frac{\pi\left(c^3x+c^2dx^3+\frac{3cd^2x^5}{5}+\frac{d^3x^7}{7}\right)}{2} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x**2+c)**3*acot(a*x),x)
```

```
[Out] Piecewise((c**3*x*acot(a*x) + c**2*d*x**3*acot(a*x) + 3*c*d**2*x**5*acot(a*
x)/5 + d**3*x**7*acot(a*x)/7 + c**3*log(x**2 + a**(-2))/(2*a) + c**2*d*x**2
/(2*a) + 3*c*d**2*x**4/(20*a) + d**3*x**6/(42*a) - c**2*d*log(x**2 + a**(-2
))/(2*a**3) - 3*c*d**2*x**2/(10*a**3) - d**3*x**4/(28*a**3) + 3*c*d**2*log(
x**2 + a**(-2))/(10*a**5) + d**3*x**2/(14*a**5) - d**3*log(x**2 + a**(-2))/
(14*a**7), Ne(a, 0)), (pi*(c**3*x + c**2*d*x**3 + 3*c*d**2*x**5/5 + d**3*x*
*7/7)/2, True))
```

3.55 $\int (c+dx^2)^2 \cot^{-1}(ax)\,dx$

Optimal. Leaf size=109

$$\frac{dx^2(10a^2c-3d)}{30a^3}+\frac{(15a^4c^2-10a^2cd+3d^2)\log(a^2x^2+1)}{30a^5}+c^2x\cot^{-1}(ax)+\frac{2}{3}cdx^3\cot^{-1}(ax)+\frac{1}{5}d^2x^5\cot^{-1}(ax)+\frac{d^2}{20}$$

```
[Out] 1/30*(10*a^2*c-3*d)*d*x^2/a^3+1/20*d^2*x^4/a+c^2*x*arccot(a*x)+2/3*c*d*x^3*
arccot(a*x)+1/5*d^2*x^5*arccot(a*x)+1/30*(15*a^4*c^2-10*a^2*c*d+3*d^2)*ln(a
^2*x^2+1)/a^5
```

Rubi [A] time = 0.13, antiderivative size = 109, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}} = 0.357$, Rules used = {194, 4913, 1594, 1247, 698}

$$\frac{(15a^4c^2-10a^2cd+3d^2)\log(a^2x^2+1)}{30a^5}+\frac{dx^2(10a^2c-3d)}{30a^3}+c^2x\cot^{-1}(ax)+\frac{2}{3}cdx^3\cot^{-1}(ax)+\frac{d^2x^4}{20a}+\frac{1}{5}d^2x^5\cot^{-1}(a$$

Antiderivative was successfully verified.

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

```
[Out] ((10*a^2*c - 3*d)*d*x^2)/(30*a^3) + (d^2*x^4)/(20*a) + c^2*x*ArcCot[a*x] +
(2*c*d*x^3*ArcCot[a*x])/3 + (d^2*x^5*ArcCot[a*x])/5 + ((15*a^4*c^2 - 10*a^2
*c*d + 3*d^2)*Log[1 + a^2*x^2])/(30*a^5)
```

Rule 194

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Int[ExpandIntegrand[(a + b*
x^n)^p, x], x] /; FreeQ[{a, b}, x] && IGtQ[n, 0] && IGtQ[p, 0]
```

Rule 698

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x] /; F
reeQ[{a, b, c, d, e, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && NeQ[2*c*d - b*e, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0]
&& IntegerQ[m]))
```

Rule 1247

```
Int[(x_)*((d_) + (e_.)*(x_)^2)^(q_.)*((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4)^(
p_.), x_Symbol] :> Dist[1/2, Subst[Int[(d + e*x)^q*(a + b*x + c*x^2)^p, x],
 x, x^2], x] /; FreeQ[{a, b, c, d, e, p, q}, x]
```

Rule 1594

```
Int[(u_.)*((a_.)*(x_)^(p_.) + (b_.)*(x_)^(q_.) + (c_.)*(x_)^(r_.))^(n_.), x
_Symbol] :> Int[u*x^(n*p)*(a + b*x^(q - p) + c*x^(r - p))^n, x] /; FreeQ[{a
, b, c, p, q, r}, x] && IntegerQ[n] && PosQ[q - p] && PosQ[r - p]
```

Rule 4913

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))*((d_.) + (e_.)*(x_)^2)^(q_.), x_Symb
ol] :> With[{u = IntHide[(d + e*x^2)^q, x]}, Dist[a + b*ArcCot[c*x], u, x]
+ Dist[b*c, Int[u/(1 + c^2*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && (I
ntegerQ[q] || ILtQ[q + 1/2, 0])
```

Rubi steps

$$\int \left(c+dx^2\right)^2 \cot^{-1}(ax)\,dx = c^2x\cot^{-1}(ax)+\frac{2}{3}cdx^3\cot^{-1}(ax)+\frac{1}{5}d^2x^5\cot^{-1}(ax)+a\int \frac{c^2x+\frac{2}{3}cdx^3+\frac{d^2x^5}{5}}{1+a^2x^2}\,dx$$
$$= c^2x\cot^{-1}(ax)+\frac{2}{3}cdx^3\cot^{-1}(ax)+\frac{1}{5}d^2x^5\cot^{-1}(ax)+a\int \frac{x\left(c^2+\frac{2}{3}cdx^2+\frac{d^2x^4}{5}\right)}{1+a^2x^2}$$
$$= c^2x\cot^{-1}(ax)+\frac{2}{3}cdx^3\cot^{-1}(ax)+\frac{1}{5}d^2x^5\cot^{-1}(ax)+\frac{1}{2}a\,\mathrm{Subst}\left(\int \frac{c^2+\frac{2cdx}{3}+\ldots}{1+a^2x}\right.$$
$$= c^2x\cot^{-1}(ax)+\frac{2}{3}cdx^3\cot^{-1}(ax)+\frac{1}{5}d^2x^5\cot^{-1}(ax)+\frac{1}{2}a\,\mathrm{Subst}\left(\int\left(\frac{(10a^2c-3d\ldots}{15a^4}\right.\right.$$
$$= \frac{\left(10a^2c-3d\right)dx^2}{30a^3}+\frac{d^2x^4}{20a}+c^2x\cot^{-1}(ax)+\frac{2}{3}cdx^3\cot^{-1}(ax)+\frac{1}{5}d^2x^5\cot^{-1}(ax)+\ldots$$

Mathematica [A] time = 0.08, size = 97, normalized size = 0.89

$$\frac{4a^5x\cot^{-1}(ax)\left(15c^2+10cdx^2+3d^2x^4\right)+a^2dx^2\left(a^2\left(20c+3dx^2\right)-6d\right)+\left(30a^4c^2-20a^2cd+6d^2\right)\log\left(a^2x^2\ldots\right.}{60a^5}$$

Antiderivative was successfully verified.

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

```
[Out] (a^2*d*x^2*(-6*d + a^2*(20*c + 3*d*x^2)) + 4*a^5*x*(15*c^2 + 10*c*d*x^2 + 3
*d^2*x^4)*ArcCot[a*x] + (30*a^4*c^2 - 20*a^2*c*d + 6*d^2)*Log[1 + a^2*x^2])
/(60*a^5)
```

fricas [A] time = 1.52, size = 108, normalized size = 0.99

$$\frac{3\,a^4d^2x^4+2\left(10\,a^4cd-3\,a^2d^2\right)x^2+4\left(3\,a^5d^2x^5+10\,a^5cdx^3+15\,a^5c^2x\right)\mathrm{arccot}\,(ax)+2\left(15\,a^4c^2-10\,a^2cd+3\ldots\right.}{60\,a^5}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/60*(3*a^4*d^2*x^4 + 2*(10*a^4*c*d - 3*a^2*d^2)*x^2 + 4*(3*a^5*d^2*x^5 + 1
0*a^5*c*d*x^3 + 15*a^5*c^2*x)*arccot(a*x) + 2*(15*a^4*c^2 - 10*a^2*c*d + 3*
d^2)*log(a^2*x^2 + 1))/a^5
```

giac [A] time = 0.14, size = 171, normalized size = 1.57

$$\frac{1}{60}\left(\frac{4\left(3\,d^2+\frac{10\,cd}{x^2}+\frac{15\,c^2}{x^4}\right)x^5\arctan\left(\frac{1}{ax}\right)}{a}+\frac{\left(3\,d^2+\frac{20\,cd}{x^2}+\frac{45\,c^2}{x^4}-\frac{6\,d^2}{a^2x^2}-\frac{30\,cd}{a^2x^4}+\frac{9\,d^2}{a^4x^4}\right)x^4}{a^2}+\frac{2\left(15\,a^4c^2-10\,a^2cd\ldots\right.}{\ldots}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/60*(4*(3*d^2 + 10*c*d/x^2 + 15*c^2/x^4)*x^5*arctan(1/(a*x))/a + (3*d^2 +
20*c*d/x^2 + 45*c^2/x^4 - 6*d^2/(a^2*x^2) - 30*c*d/(a^2*x^4) + 9*d^2/(a^4*x
^4))*x^4/a^2 + 2*(15*a^4*c^2 - 10*a^2*c*d + 3*d^2)*log(1/(a^2*x^2) + 1)/a^6
 - 2*(15*a^4*c^2 - 10*a^2*c*d + 3*d^2)*log(1/(a^2*x^2))/a^6)*a
```

maple [A] time = 0.04, size = 119, normalized size = 1.09

$$\frac{d^2x^5\mathrm{arccot}\,(ax)}{5}+\frac{2cd\,x^3\mathrm{arccot}\,(ax)}{3}+c^2x\,\mathrm{arccot}\,(ax)+\frac{dc\,x^2}{3a}+\frac{d^2x^4}{20a}-\frac{x^2d^2}{10a^3}+\frac{c^2\ln\left(a^2x^2+1\right)}{2a}-\frac{\ln\left(a^2x^2+1\right)cd}{3a^3}+\ldots$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

maxima [A] time = 0.31, size = 103, normalized size = 0.94

$$\frac{1}{60}\,a\left(\frac{3\,a^2d^2x^4+2\left(10\,a^2cd-3\,d^2\right)x^2}{a^4}+\frac{2\left(15\,a^4c^2-10\,a^2cd+3\,d^2\right)\log\left(a^2x^2+1\right)}{a^6}\right)+\frac{1}{15}\left(3\,d^2x^5+10\,cdx^3+15\,c^2\right.$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/60*a*((3*a^2*d^2*x^4 + 2*(10*a^2*c*d - 3*d^2)*x^2)/a^4 + 2*(15*a^4*c^2 -
10*a^2*c*d + 3*d^2)*log(a^2*x^2 + 1)/a^6) + 1/15*(3*d^2*x^5 + 10*c*d*x^3 +
15*c^2*x)*arccot(a*x)
```

mupad [B] time = 0.84, size = 116, normalized size = 1.06

$$\frac{a^4\left(\frac{c^2\,\ln\left(a^2\,x^2+1\right)}{2}+\frac{d^2\,x^4}{20}+\frac{c\,d\,x^2}{3}\right)-a^2\left(\frac{d^2\,x^2}{10}+\frac{c\,d\,\ln\left(a^2\,x^2+1\right)}{3}\right)+\frac{d^2\,\ln\left(a^2\,x^2+1\right)}{10}}{a^5}+c^2\,x\,\mathrm{acot}\left(a\,x\right)+\frac{d^2\,x^5\,\mathrm{acot}\left(a\,x\right)}{5}+\frac{2\,c\,d\,x}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

sympy [A] time = 1.36, size = 151, normalized size = 1.39

$$\begin{cases} c^2x\,\mathrm{acot}\,(ax)+\frac{2cdx^3\,\mathrm{acot}\,(ax)}{3}+\frac{d^2x^5\,\mathrm{acot}\,(ax)}{5}+\frac{c^2\log\left(x^2+\frac{1}{a^2}\right)}{2a}+\frac{cdx^2}{3a}+\frac{d^2x^4}{20a}-\frac{cd\log\left(x^2+\frac{1}{a^2}\right)}{3a^3}-\frac{d^2x^2}{10a^3}+\frac{d^2\log\left(x^2+\frac{1}{a^2}\right)}{10a^5} & \text{for } a \\ \frac{\pi\left(c^2x+\frac{2cdx^3}{3}+\frac{d^2x^5}{5}\right)}{2} & \text{othe} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Piecewise((c**2*x*acot(a*x) + 2*c*d*x**3*acot(a*x)/3 + d**2*x**5*acot(a*x)/
5 + c**2*log(x**2 + a**(-2))/(2*a) + c*d*x**2/(3*a) + d**2*x**4/(20*a) - c*
d*log(x**2 + a**(-2))/(3*a**3) - d**2*x**2/(10*a**3) + d**2*log(x**2 + a**(
-2))/(10*a**5), Ne(a, 0)), (pi*(c**2*x + 2*c*d*x**3/3 + d**2*x**5/5)/2, Tru
e))
```

3.56 $\int \left(c+dx^2\right)\cot^{-1}(ax)\,dx$

Optimal. Leaf size=58

$$\frac{\left(3a^2c-d\right)\log\left(a^2x^2+1\right)}{6a^3}+cx\cot^{-1}(ax)+\frac{1}{3}dx^3\cot^{-1}(ax)+\frac{dx^2}{6a}$$

```
[Out] 1/6*d*x^2/a+c*x*arccot(a*x)+1/3*d*x^3*arccot(a*x)+1/6*(3*a^2*c-d)*ln(a^2*x^
2+1)/a^3
```

Rubi [A] time = 0.06, antiderivative size = 58, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333, Rules used = {4913, 1593, 444, 43}

$$\frac{\left(3a^2c-d\right)\log\left(a^2x^2+1\right)}{6a^3}+cx\cot^{-1}(ax)+\frac{dx^2}{6a}+\frac{1}{3}dx^3\cot^{-1}(ax)$$

Antiderivative was successfully verified.

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

```
[Out] (d*x^2)/(6*a) + c*x*ArcCot[a*x] + (d*x^3*ArcCot[a*x])/3 + ((3*a^2*c - d)*Lo
g[1 + a^2*x^2])/(6*a^3)
```

Rule 43

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

Rule 444

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.)*((c_) + (d_.)*(x_)^(n_))^(q_.
), x_Symbol] :> Dist[1/n, Subst[Int[(a + b*x)^p*(c + d*x)^q, x], x, x^n], x
] /; FreeQ[{a, b, c, d, m, n, p, q}, x] && NeQ[b*c - a*d, 0] && EqQ[m - n +
 1, 0]
```

Rule 1593

```
Int[(u_.)*((a_.)*(x_)^(p_.) + (b_.)*(x_)^(q_.))^(n_.), x_Symbol] :> Int[u*x
^(n*p)*(a + b*x^(q - p))^n, x] /; FreeQ[{a, b, p, q}, x] && IntegerQ[n] &&
PosQ[q - p]
```

Rule 4913

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))*((d_.) + (e_.)*(x_)^2)^(q_.), x_Symb
ol] :> With[{u = IntHide[(d + e*x^2)^q, x]}, Dist[a + b*ArcCot[c*x], u, x]
+ Dist[b*c, Int[u/(1 + c^2*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && (I
ntegerQ[q] || ILtQ[q + 1/2, 0])
```

Rubi steps

$$
\begin{aligned}
\int \left(c+dx^2\right)\cot^{-1}(ax)\,dx &= cx\cot^{-1}(ax)+\frac{1}{3}dx^3\cot^{-1}(ax)+a\int \frac{cx+\frac{dx^3}{3}}{1+a^2x^2}\,dx\\
&= cx\cot^{-1}(ax)+\frac{1}{3}dx^3\cot^{-1}(ax)+a\int \frac{x\left(c+\frac{dx^2}{3}\right)}{1+a^2x^2}\,dx\\
&= cx\cot^{-1}(ax)+\frac{1}{3}dx^3\cot^{-1}(ax)+\frac{1}{2}a\,\text{Subst}\left(\int \frac{c+\frac{dx}{3}}{1+a^2x}\,dx,x,x^2\right)\\
&= cx\cot^{-1}(ax)+\frac{1}{3}dx^3\cot^{-1}(ax)+\frac{1}{2}a\,\text{Subst}\left(\int \left(\frac{d}{3a^2}+\frac{3a^2c-d}{3a^2\left(1+a^2x\right)}\right)dx,x,x^2\right)\\
&= \frac{dx^2}{6a}+cx\cot^{-1}(ax)+\frac{1}{3}dx^3\cot^{-1}(ax)+\frac{\left(3a^2c-d\right)\log\left(1+a^2x^2\right)}{6a^3}
\end{aligned}
$$

Mathematica [A] time = 0.01, size = 67, normalized size = 1.16

$$
\frac{c\log\left(a^2x^2+1\right)}{2a}-\frac{d\log\left(a^2x^2+1\right)}{6a^3}+cx\cot^{-1}(ax)+\frac{1}{3}dx^3\cot^{-1}(ax)+\frac{dx^2}{6a}
$$

Antiderivative was successfully verified.

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

```
[Out] (d*x^2)/(6*a) + c*x*ArcCot[a*x] + (d*x^3*ArcCot[a*x])/3 + (c*Log[1 + a^2*x^
2])/(2*a) - (d*Log[1 + a^2*x^2])/(6*a^3)
```

fricas [A] time = 0.97, size = 57, normalized size = 0.98

$$
\frac{a^2dx^2+2\left(a^3dx^3+3\,a^3cx\right)\text{arccot}\left(ax\right)+\left(3\,a^2c-d\right)\log\left(a^2x^2+1\right)}{6\,a^3}
$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/6*(a^2*d*x^2 + 2*(a^3*d*x^3 + 3*a^3*c*x)*arccot(a*x) + (3*a^2*c - d)*log(
a^2*x^2 + 1))/a^3
```

giac [A] time = 0.12, size = 99, normalized size = 1.71

$$
\frac{1}{6}\left(\frac{2\left(d+\frac{3c}{x^2}\right)x^3\arctan\left(\frac{1}{ax}\right)}{a}+\frac{\left(d+\frac{3c}{x^2}-\frac{d}{a^2x^2}\right)x^2}{a^2}+\frac{\left(3\,a^2c-d\right)\log\left(\frac{1}{a^2x^2}+1\right)}{a^4}-\frac{\left(3\,a^2c-d\right)\log\left(\frac{1}{a^2x^2}\right)}{a^4}\right)a
$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

maple [A] time = 0.04, size = 60, normalized size = 1.03

$$
\frac{d\,x^3\text{arccot}\left(ax\right)}{3}+cx\,\text{arccot}\left(ax\right)+\frac{d\,x^2}{6a}+\frac{c\ln\left(a^2x^2+1\right)}{2a}-\frac{\ln\left(a^2x^2+1\right)d}{6a^3}
$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/3*d*x^3*arccot(a*x)+c*x*arccot(a*x)+1/6*d*x^2/a+1/2*c*ln(a^2*x^2+1)/a-1/6
/a^3*ln(a^2*x^2+1)*d
```

maxima [A] time = 0.32, size = 53, normalized size = 0.91

$$\frac{1}{6}a\left(\frac{dx^2}{a^2}+\frac{\left(3a^2c-d\right)\log\left(a^2x^2+1\right)}{a^4}\right)+\frac{1}{3}\left(dx^3+3cx\right)\operatorname{arccot}(ax)$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

mupad [B] time = 0.79, size = 62, normalized size = 1.07

$$\frac{d\,x^3\operatorname{acot}(a\,x)}{3}-\frac{\frac{d\,\ln\left(a^2\,x^2+1\right)}{6}-a^2\left(\frac{c\,\ln\left(a^2\,x^2+1\right)}{2}+\frac{d\,x^2}{6}\right)}{a^3}+c\,x\operatorname{acot}(a\,x)$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] (d*x^3*acot(a*x))/3 - ((d*log(a^2*x^2 + 1))/6 - a^2*((c*log(a^2*x^2 + 1))/2
 + (d*x^2)/6))/a^3 + c*x*acot(a*x)
```

sympy [A] time = 0.62, size = 73, normalized size = 1.26

$$\begin{cases} cx\operatorname{acot}(ax)+\frac{dx^3\operatorname{acot}(ax)}{3}+\frac{c\log\left(x^2+\frac{1}{a^2}\right)}{2a}+\frac{dx^2}{6a}-\frac{d\log\left(x^2+\frac{1}{a^2}\right)}{6a^3} & \text{for } a\neq 0\\ \frac{\pi\left(cx+\frac{dx^3}{3}\right)}{2} & \text{otherwise}\end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Piecewise((c*x*acot(a*x) + d*x**3*acot(a*x)/3 + c*log(x**2 + a**(-2))/(2*a)
 + d*x**2/(6*a) - d*log(x**2 + a**(-2))/(6*a**3), Ne(a, 0)), (pi*(c*x + d*x
**3/3)/2, True))
```

3.57 $\int \frac{\cot^{-1}(ax)}{c+dx^2}\,dx$

Optimal. Leaf size=403

$$-\frac{\text{Li}_2\left(1-\frac{2i\sqrt{c}\sqrt{d}(i-ax)}{\left(a\sqrt{c}-\sqrt{d}\right)\left(\sqrt{c}-i\sqrt{d}x\right)}\right)}{4\sqrt{c}\sqrt{d}}+\frac{\text{Li}_2\left(\frac{2i\sqrt{c}\sqrt{d}(ax+i)}{\left(\sqrt{c}a+\sqrt{d}\right)\left(\sqrt{c}-i\sqrt{d}x\right)}+1\right)}{4\sqrt{c}\sqrt{d}}+\frac{i\log\left(1-\frac{i}{ax}\right)\tan^{-1}\left(\frac{\sqrt{d}x}{\sqrt{c}}\right)}{2\sqrt{c}\sqrt{d}}-\frac{i\log\left(1+\frac{i}{ax}\right)\tan^{-1}\left(\cdots\right.}{2\sqrt{c}\sqrt{d}}$$

```
[Out] 1/2*I*arctan(x*d^(1/2)/c^(1/2))*ln(1-I/a/x)/c^(1/2)/d^(1/2)-1/2*I*arctan(x*
d^(1/2)/c^(1/2))*ln(1+I/a/x)/c^(1/2)/d^(1/2)-1/2*I*arctan(x*d^(1/2)/c^(1/2)
)*ln(2*I*(I-a*x)*c^(1/2)*d^(1/2)/(a*c^(1/2)-d^(1/2))/(c^(1/2)-I*x*d^(1/2)))
/c^(1/2)/d^(1/2)+1/2*I*arctan(x*d^(1/2)/c^(1/2))*ln(-2*I*(I+a*x)*c^(1/2)*d^
(1/2)/(a*c^(1/2)+d^(1/2))/(c^(1/2)-I*x*d^(1/2)))/c^(1/2)/d^(1/2)-1/4*polylo
g(2,1-2*I*(I-a*x)*c^(1/2)*d^(1/2)/(a*c^(1/2)-d^(1/2))/(c^(1/2)-I*x*d^(1/2))
)/c^(1/2)/d^(1/2)+1/4*polylog(2,1+2*I*(I+a*x)*c^(1/2)*d^(1/2)/(a*c^(1/2)+d^
(1/2))/(c^(1/2)-I*x*d^(1/2)))/c^(1/2)/d^(1/2)
```

Rubi [A] time = 0.92, antiderivative size = 403, normalized size of antiderivative = 1.00, number of steps used = 27, number of rules used = 13, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.929, Rules used = {4909, 205, 2470, 12, 260, 6688, 4876, 4848, 2391, 4856, 2402, 2315, 2447}

$$-\frac{\text{PolyLog}\left(2,1-\frac{2i\sqrt{c}\sqrt{d}(-ax+i)}{\left(a\sqrt{c}-\sqrt{d}\right)\left(\sqrt{c}-i\sqrt{d}x\right)}\right)}{4\sqrt{c}\sqrt{d}}+\frac{\text{PolyLog}\left(2,1+\frac{2i\sqrt{c}\sqrt{d}(ax+i)}{\left(a\sqrt{c}+\sqrt{d}\right)\left(\sqrt{c}-i\sqrt{d}x\right)}\right)}{4\sqrt{c}\sqrt{d}}+\frac{i\log\left(1-\frac{i}{ax}\right)\tan^{-1}\left(\frac{\sqrt{d}x}{\sqrt{c}}\right)}{2\sqrt{c}\sqrt{d}}-\frac{i\log\left(\cdots\right.}{}$$

Antiderivative was successfully verified.

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

```
[Out] ((I/2)*ArcTan[(Sqrt[d]*x)/Sqrt[c]]*Log[1 - I/(a*x)])/(Sqrt[c]*Sqrt[d]) - ((
I/2)*ArcTan[(Sqrt[d]*x)/Sqrt[c]]*Log[1 + I/(a*x)])/(Sqrt[c]*Sqrt[d]) - ((I/
2)*ArcTan[(Sqrt[d]*x)/Sqrt[c]]*Log[((2*I)*Sqrt[c]*Sqrt[d]*(I - a*x))/((a*Sq
rt[c] - Sqrt[d])*(Sqrt[c] - I*Sqrt[d]*x))])/(Sqrt[c]*Sqrt[d]) + ((I/2)*ArcT
an[(Sqrt[d]*x)/Sqrt[c]]*Log[((-2*I)*Sqrt[c]*Sqrt[d]*(I + a*x))/((a*Sqrt[c]
+ Sqrt[d])*(Sqrt[c] - I*Sqrt[d]*x))])/(Sqrt[c]*Sqrt[d]) - PolyLog[2, 1 - ((
2*I)*Sqrt[c]*Sqrt[d]*(I - a*x))/((a*Sqrt[c] - Sqrt[d])*(Sqrt[c] - I*Sqrt[d]
*x))]/(4*Sqrt[c]*Sqrt[d]) + PolyLog[2, 1 + ((2*I)*Sqrt[c]*Sqrt[d]*(I + a*x)
)/((a*Sqrt[c] + Sqrt[d])*(Sqrt[c] - I*Sqrt[d]*x))]/(4*Sqrt[c]*Sqrt[d])
```

Rule 12

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

Rule 205

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

Rule 260

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

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2391

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

Rule 2402

```
Int[Log[(c_.)/((d_) + (e_.)*(x_))]/((f_) + (g_.)*(x_)^2), x_Symbol] :> -Dis
t[e/g, Subst[Int[Log[2*d*x]/(1 - 2*d*x), x], x, 1/(d + e*x)], x] /; FreeQ[{
c, d, e, f, g}, x] && EqQ[c, 2*d] && EqQ[e^2*f + d^2*g, 0]
```

Rule 2447

```
Int[Log[u_]*(Pq_)^(m_.), x_Symbol] :> With[{C = FullSimplify[(Pq^m*(1 - u))
/D[u, x]]}, Simp[C*PolyLog[2, 1 - u], x] /; FreeQ[C, x]] /; IntegerQ[m] &&
PolyQ[Pq, x] && RationalFunctionQ[u, x] && LeQ[RationalFunctionExponents[u,
 x][[2]], Expon[Pq, x]]
```

Rule 2470

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_)^(n_))^(p_.)]*(b_.))/((f_) + (g_.)
*(x_)^2), x_Symbol] :> With[{u = IntHide[1/(f + g*x^2), x]}, Simp[u*(a + b*
Log[c*(d + e*x^n)^p]), x] - Dist[b*e*n*p, Int[(u*x^(n - 1))/(d + e*x^n), x]
, x]] /; FreeQ[{a, b, c, d, e, f, g, n, p}, x] && IntegerQ[n]
```

Rule 4848

```
Int[((a_.) + ArcTan[(c_.)*(x_)]*(b_.))/(x_), x_Symbol] :> Simp[a*Log[x], x]
 + (Dist[(I*b)/2, Int[Log[1 - I*c*x]/x, x], x] - Dist[(I*b)/2, Int[Log[1 +
I*c*x]/x, x], x]) /; FreeQ[{a, b, c}, x]
```

Rule 4856

```
Int[((a_.) + ArcTan[(c_.)*(x_)]*(b_.))/((d_) + (e_.)*(x_)), x_Symbol] :> -S
imp[((a + b*ArcTan[c*x])*Log[2/(1 - I*c*x)])/e, x] + (Dist[(b*c)/e, Int[Log
[2/(1 - I*c*x)]/(1 + c^2*x^2), x], x] - Dist[(b*c)/e, Int[Log[(2*c*(d + e*x
))/((c*d + I*e)*(1 - I*c*x))]/(1 + c^2*x^2), x], x] + Simp[((a + b*ArcTan[c
*x])*Log[(2*c*(d + e*x))/((c*d + I*e)*(1 - I*c*x))])/e, x]) /; FreeQ[{a, b,
 c, d, e}, x] && NeQ[c^2*d^2 + e^2, 0]
```

Rule 4876

```
Int[((a_.) + ArcTan[(c_.)*(x_)]*(b_.))^(p_.)*((f_.)*(x_))^(m_.)*((d_) + (e_
.)*(x_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*ArcTan[c*x])^p, (f*
x)^m*(d + e*x)^q, x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && IGtQ[p, 0] &
& IntegerQ[q] && (GtQ[q, 0] || NeQ[a, 0] || IntegerQ[m])
```

Rule 4909

```
Int[ArcCot[(c_.)*(x_)]/((d_.) + (e_.)*(x_)^2), x_Symbol] :> Dist[I/2, Int[L
og[1 - I/(c*x)]/(d + e*x^2), x], x] - Dist[I/2, Int[Log[1 + I/(c*x)]/(d + e
*x^2), x], x] /; FreeQ[{c, d, e}, x]
```

Rule 6688

```
Int[u_, x_Symbol] :> With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; Simpl
erIntegrandQ[v, u, x]]
```

Rubi steps

$$\int \frac{\cot^{-1}(ax)}{c+dx^2}\,dx = \frac{1}{2}i\int \frac{\log\left(1-\frac{i}{ax}\right)}{c+dx^2}\,dx - \frac{1}{2}i\int \frac{\log\left(1+\frac{i}{ax}\right)}{c+dx^2}\,dx$$

$$= \frac{i\tan^{-1}\left(\frac{\sqrt{d}\,x}{\sqrt{c}}\right)\log\left(1-\frac{i}{ax}\right)}{2\sqrt{c}\sqrt{d}} - \frac{i\tan^{-1}\left(\frac{\sqrt{d}\,x}{\sqrt{c}}\right)\log\left(1+\frac{i}{ax}\right)}{2\sqrt{c}\sqrt{d}} + \frac{\int \frac{\tan^{-1}\left(\frac{\sqrt{d}\,x}{\sqrt{c}}\right)}{\sqrt{c}\sqrt{d}\left(1-\frac{i}{ax}\right)x^2}\,dx}{2a} + \frac{\int \frac{\tan^{-1}\left(\frac{\sqrt{d}\,x}{\sqrt{c}}\right)}{\sqrt{c}\sqrt{d}\left(1+\frac{i}{ax}\right)x}}{2a}$$

$$= \frac{i\tan^{-1}\left(\frac{\sqrt{d}\,x}{\sqrt{c}}\right)\log\left(1-\frac{i}{ax}\right)}{2\sqrt{c}\sqrt{d}} - \frac{i\tan^{-1}\left(\frac{\sqrt{d}\,x}{\sqrt{c}}\right)\log\left(1+\frac{i}{ax}\right)}{2\sqrt{c}\sqrt{d}} + \frac{\int \frac{\tan^{-1}\left(\frac{\sqrt{d}\,x}{\sqrt{c}}\right)}{\left(1-\frac{i}{ax}\right)x^2}\,dx}{2a\sqrt{c}\sqrt{d}} + \frac{\int \frac{\tan^{-1}\left(\frac{\sqrt{d}\,x}{\sqrt{c}}\right)}{\left(1+\frac{i}{ax}\right)x^2}\,dx}{2a\sqrt{c}\sqrt{d}}$$

$$= \frac{i\tan^{-1}\left(\frac{\sqrt{d}\,x}{\sqrt{c}}\right)\log\left(1-\frac{i}{ax}\right)}{2\sqrt{c}\sqrt{d}} - \frac{i\tan^{-1}\left(\frac{\sqrt{d}\,x}{\sqrt{c}}\right)\log\left(1+\frac{i}{ax}\right)}{2\sqrt{c}\sqrt{d}} + \frac{\int \frac{a\tan^{-1}\left(\frac{\sqrt{d}\,x}{\sqrt{c}}\right)}{x(-i+ax)}\,dx}{2a\sqrt{c}\sqrt{d}} + \frac{\int \frac{a\tan^{-1}\left(\frac{\sqrt{d}\,x}{\sqrt{c}}\right)}{x(i+ax)}\,dx}{2a\sqrt{c}\sqrt{d}}$$

$$= \frac{i\tan^{-1}\left(\frac{\sqrt{d}\,x}{\sqrt{c}}\right)\log\left(1-\frac{i}{ax}\right)}{2\sqrt{c}\sqrt{d}} - \frac{i\tan^{-1}\left(\frac{\sqrt{d}\,x}{\sqrt{c}}\right)\log\left(1+\frac{i}{ax}\right)}{2\sqrt{c}\sqrt{d}} + \frac{\int \frac{\tan^{-1}\left(\frac{\sqrt{d}\,x}{\sqrt{c}}\right)}{x(-i+ax)}\,dx}{2\sqrt{c}\sqrt{d}} + \frac{\int \frac{\tan^{-1}\left(\frac{\sqrt{d}\,x}{\sqrt{c}}\right)}{x(i+ax)}\,dx}{2\sqrt{c}\sqrt{d}}$$

$$= \frac{i\tan^{-1}\left(\frac{\sqrt{d}\,x}{\sqrt{c}}\right)\log\left(1-\frac{i}{ax}\right)}{2\sqrt{c}\sqrt{d}} - \frac{i\tan^{-1}\left(\frac{\sqrt{d}\,x}{\sqrt{c}}\right)\log\left(1+\frac{i}{ax}\right)}{2\sqrt{c}\sqrt{d}} + \frac{\int \left(\frac{i\tan^{-1}\left(\frac{\sqrt{d}\,x}{\sqrt{c}}\right)}{x} - \frac{ia\tan^{-1}\left(\frac{\sqrt{d}\,x}{\sqrt{c}}\right)}{-i+ax}\right)dx}{2\sqrt{c}\sqrt{d}} +$$

$$= \frac{i\tan^{-1}\left(\frac{\sqrt{d}\,x}{\sqrt{c}}\right)\log\left(1-\frac{i}{ax}\right)}{2\sqrt{c}\sqrt{d}} - \frac{i\tan^{-1}\left(\frac{\sqrt{d}\,x}{\sqrt{c}}\right)\log\left(1+\frac{i}{ax}\right)}{2\sqrt{c}\sqrt{d}} - \frac{(ia)\int \frac{\tan^{-1}\left(\frac{\sqrt{d}\,x}{\sqrt{c}}\right)}{-i+ax}\,dx}{2\sqrt{c}\sqrt{d}} + \frac{(ia)\int \frac{\tan^{-1}\left(\frac{\sqrt{}}{\sqrt{}}\right.}{i+ax}}{2\sqrt{c}\sqrt{d}}$$

$$= \frac{i\tan^{-1}\left(\frac{\sqrt{d}\,x}{\sqrt{c}}\right)\log\left(1-\frac{i}{ax}\right)}{2\sqrt{c}\sqrt{d}} - \frac{i\tan^{-1}\left(\frac{\sqrt{d}\,x}{\sqrt{c}}\right)\log\left(1+\frac{i}{ax}\right)}{2\sqrt{c}\sqrt{d}} - \frac{i\tan^{-1}\left(\frac{\sqrt{d}\,x}{\sqrt{c}}\right)\log\left(\frac{2i\sqrt{c}\sqrt{d}\,(i-ax)}{\left(a\sqrt{c}-\sqrt{d}\right)\left(\sqrt{c}-i\sqrt{d}\right.}\right.}{2\sqrt{c}\sqrt{d}}$$

$$= \frac{i\tan^{-1}\left(\frac{\sqrt{d}\,x}{\sqrt{c}}\right)\log\left(1-\frac{i}{ax}\right)}{2\sqrt{c}\sqrt{d}} - \frac{i\tan^{-1}\left(\frac{\sqrt{d}\,x}{\sqrt{c}}\right)\log\left(1+\frac{i}{ax}\right)}{2\sqrt{c}\sqrt{d}} - \frac{i\tan^{-1}\left(\frac{\sqrt{d}\,x}{\sqrt{c}}\right)\log\left(\frac{2i\sqrt{c}\sqrt{d}\,(i-ax)}{\left(a\sqrt{c}-\sqrt{d}\right)\left(\sqrt{c}-i\sqrt{d}\right.}\right.}{2\sqrt{c}\sqrt{d}}$$

Mathematica [A] time = 0.33, size = 523, normalized size = 1.30

$$\frac{i\left(-\text{Li}_2\left(\frac{a\left(\sqrt{-c}-\sqrt{d}\,x\right)}{a\sqrt{-c}-i\sqrt{d}}\right)+\text{Li}_2\left(\frac{a\left(\sqrt{-c}-\sqrt{d}\,x\right)}{\sqrt{-c}\,a+i\sqrt{d}}\right)-\text{Li}_2\left(\frac{a\left(\sqrt{d}\,x+\sqrt{-c}\right)}{a\sqrt{-c}-i\sqrt{d}}\right)+\text{Li}_2\left(\frac{a\left(\sqrt{d}\,x+\sqrt{-c}\right)}{\sqrt{-c}\,a+i\sqrt{d}}\right)+\log\left(1-\frac{i}{ax}\right)\log\left(\sqrt{-c}-\sqrt{d}\,x\right.\right.}{}$$

Warning: Unable to verify antiderivative.

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

```
[Out] ((I/4)*(Log[1 - I/(a*x)]*Log[Sqrt[-c] - Sqrt[d]*x] - Log[1 + I/(a*x)]*Log[S
qrt[-c] - Sqrt[d]*x] - Log[(Sqrt[d]*(-I + a*x))/(a*Sqrt[-c] - I*Sqrt[d])]*L
og[Sqrt[-c] - Sqrt[d]*x] + Log[(Sqrt[d]*(I + a*x))/(a*Sqrt[-c] + I*Sqrt[d])
]*Log[Sqrt[-c] - Sqrt[d]*x] - Log[1 - I/(a*x)]*Log[Sqrt[-c] + Sqrt[d]*x] +
Log[1 + I/(a*x)]*Log[Sqrt[-c] + Sqrt[d]*x] + Log[(Sqrt[d]*(I - a*x))/(a*Sqr
t[-c] + I*Sqrt[d])]*Log[Sqrt[-c] + Sqrt[d]*x] - Log[-((Sqrt[d]*(I + a*x))/(
a*Sqrt[-c] - I*Sqrt[d]))]*Log[Sqrt[-c] + Sqrt[d]*x] - PolyLog[2, (a*(Sqrt[-
```

```
c] - Sqrt[d]*x))/(a*Sqrt[-c] - I*Sqrt[d])] + PolyLog[2, (a*(Sqrt[-c] - Sqrt
[d]*x))/(a*Sqrt[-c] + I*Sqrt[d])] - PolyLog[2, (a*(Sqrt[-c] + Sqrt[d]*x))/(
a*Sqrt[-c] - I*Sqrt[d])] + PolyLog[2, (a*(Sqrt[-c] + Sqrt[d]*x))/(a*Sqrt[-c
] + I*Sqrt[d])]))/(Sqrt[-c]*Sqrt[d])
```

fricas [F] time = 0.59, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\operatorname{arccot}(ax)}{dx^2+c}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integral(arccot(a*x)/(d*x^2 + c), x)
```

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

$$\int \frac{\operatorname{arccot}(ax)}{dx^2+c}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate(arccot(a*x)/(d*x^2 + c), x)
```

maple [B] time = 0.72, size = 826, normalized size = 2.05

$$-\frac{i\sqrt{a^2cd}\,\operatorname{arccot}(ax)\ln\left(1-\frac{(a^2c-d)(ax+i)^2}{(a^2x^2+1)\left(a^2c+2\sqrt{a^2cd}+d\right)}\right)}{2acd}-\frac{\sqrt{a^2cd}\,\operatorname{arccot}(ax)^2}{2acd}-\frac{\sqrt{a^2cd}\,\operatorname{polylog}\left(2,\frac{(a^2c-d)(ax+i)^2}{(a^2x^2+1)\left(a^2c+2\sqrt{a^2c\ldots}\right.}\right.}{4acd}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/2*I/a*(a^2*c*d)^(1/2)/c/d*arccot(a*x)*ln(1-(a^2*c-d)*(I+a*x)^2/(a^2*x^2+
1)/(a^2*c+2*(a^2*c*d)^(1/2)+d))-1/2/a*(a^2*c*d)^(1/2)/c/d*arccot(a*x)^2-1/4
/a*(a^2*c*d)^(1/2)/c/d*polylog(2,(a^2*c-d)*(I+a*x)^2/(a^2*x^2+1)/(a^2*c+2*(
a^2*c*d)^(1/2)+d))+1/2*I*a^3*ln(1-(a^2*c-d)*(I+a*x)^2/(a^2*x^2+1)/(a^2*c-2*
(a^2*c*d)^(1/2)+d))*arccot(a*x)/d/(a^4*c^2-2*a^2*c*d+d^2)*(a^2*c*d)^(1/2)*c
-I*a*ln(1-(a^2*c-d)*(I+a*x)^2/(a^2*x^2+1)/(a^2*c-2*(a^2*c*d)^(1/2)+d))*arcc
ot(a*x)/(a^4*c^2-2*a^2*c*d+d^2)*(a^2*c*d)^(1/2)+1/2*a^3*arccot(a*x)^2/d/(a^
4*c^2-2*a^2*c*d+d^2)*(a^2*c*d)^(1/2)*c-a*arccot(a*x)^2/(a^4*c^2-2*a^2*c*d+d
^2)*(a^2*c*d)^(1/2)+1/2*I/a*ln(1-(a^2*c-d)*(I+a*x)^2/(a^2*x^2+1)/(a^2*c-2*(
a^2*c*d)^(1/2)+d))*arccot(a*x)/c/(a^4*c^2-2*a^2*c*d+d^2)*(a^2*c*d)^(1/2)*d+
1/4*a^3*polylog(2,(a^2*c-d)*(I+a*x)^2/(a^2*x^2+1)/(a^2*c-2*(a^2*c*d)^(1/2)+
d))/d/(a^4*c^2-2*a^2*c*d+d^2)*(a^2*c*d)^(1/2)*c-1/2*a*polylog(2,(a^2*c-d)*(
I+a*x)^2/(a^2*x^2+1)/(a^2*c-2*(a^2*c*d)^(1/2)+d))/(a^4*c^2-2*a^2*c*d+d^2)*(
a^2*c*d)^(1/2)+1/2/a*arccot(a*x)^2/c/(a^4*c^2-2*a^2*c*d+d^2)*(a^2*c*d)^(1/2
)*d+1/4/a*polylog(2,(a^2*c-d)*(I+a*x)^2/(a^2*x^2+1)/(a^2*c-2*(a^2*c*d)^(1/2
)+d))/c/(a^4*c^2-2*a^2*c*d+d^2)*(a^2*c*d)^(1/2)*d
```

maxima [A] time = 0.65, size = 528, normalized size = 1.31

$$-\frac{a\left(\frac{8\arctan(ax)\arctan\left(\frac{dx}{\sqrt{cd}}\right)}{a}-\frac{4\arctan(ax)\arctan\left(\frac{\sqrt{d}x}{\sqrt{c}}\right)+4\arctan\left(\frac{\sqrt{d}x}{\sqrt{c}}\right)\arctan\left(-\frac{a\sqrt{d}x}{a\sqrt{c}-\sqrt{d}},-\frac{\sqrt{d}}{a\sqrt{c}-\sqrt{d}}\right)+\log\left(dx^2+c\right)\log\left(\frac{a^2cd+\left(a^4cd+a^2d^2\right)x^{\ldots}}{a^4c^2+6a^2cd+4\ldots}\right.}{\ldots}\right.}{\ldots}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/8*a*(8*arctan(a*x)*arctan(d*x/sqrt(c*d))/a - (4*arctan(a*x)*arctan(sqrt(
d)*x/sqrt(c)) + 4*arctan(sqrt(d)*x/sqrt(c))*arctan2(-a*sqrt(d)*x/(a*sqrt(c)
 - sqrt(d)), -sqrt(d)/(a*sqrt(c) - sqrt(d))) + log(d*x^2 + c)*log((a^2*c*d
+ (a^4*c*d + a^2*d^2)*x^2 + 2*(a^3*d*x^2 + a*d)*sqrt(c)*sqrt(d) + d^2)/(a^4
*c^2 + 6*a^2*c*d + 4*(a^3*c + a*d)*sqrt(c)*sqrt(d) + d^2)) - log(d*x^2 + c)
*log((a^2*c*d + (a^4*c*d + a^2*d^2)*x^2 - 2*(a^3*d*x^2 + a*d)*sqrt(c)*sqrt(
d) + d^2)/(a^4*c^2 + 6*a^2*c*d - 4*(a^3*c + a*d)*sqrt(c)*sqrt(d) + d^2)) +
2*dilog((a^2*c + I*a*d*x + (I*a^2*x + a)*sqrt(c)*sqrt(d))/(a^2*c + 2*a*sqrt
(c)*sqrt(d) + d)) + 2*dilog((a^2*c - I*a*d*x - (I*a^2*x - a)*sqrt(c)*sqrt(d
))/(a^2*c + 2*a*sqrt(c)*sqrt(d) + d)) - 2*dilog((a^2*c + I*a*d*x - (I*a^2*x
 + a)*sqrt(c)*sqrt(d))/(a^2*c - 2*a*sqrt(c)*sqrt(d) + d)) - 2*dilog((a^2*c
- I*a*d*x + (I*a^2*x - a)*sqrt(c)*sqrt(d))/(a^2*c - 2*a*sqrt(c)*sqrt(d) + d
)))/a)/sqrt(c*d) + arccot(a*x)*arctan(d*x/sqrt(c*d))/sqrt(c*d) + arctan(a*x
)*arctan(d*x/sqrt(c*d))/sqrt(c*d)
```

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

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

$$\int \frac{\operatorname{acot}(ax)}{c+dx^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

3.58 $\int \frac{\cot^{-1}(ax)}{(c+dx^2)^2} dx$

Optimal. Leaf size=801

$$\frac{\tan^{-1}\left(\frac{\sqrt{d}x}{\sqrt{c}}\right)\cot^{-1}(ax)}{2c^{3/2}\sqrt{d}}+\frac{x\cot^{-1}(ax)}{2c\left(dx^2+c\right)}-\frac{ia\log\left(\frac{\sqrt{d}\left(1-\sqrt{-a^2}x\right)}{i\sqrt{-a^2}\sqrt{c}+\sqrt{d}}\right)\log\left(1-\frac{i\sqrt{d}x}{\sqrt{c}}\right)}{8\sqrt{-a^2}c^{3/2}\sqrt{d}}+\frac{ia\log\left(-\frac{\sqrt{d}\left(\sqrt{-a^2}x+1\right)}{i\sqrt{-a^2}\sqrt{c}-\sqrt{d}}\right)\log\left(1-\frac{i\sqrt{}}{\sqrt{}}\right.}{8\sqrt{-a^2}c^{3/2}\sqrt{d}}$$

```
[Out] 1/2*x*arccot(a*x)/c/(d*x^2+c)+1/4*a*ln(a^2*x^2+1)/c/(a^2*c-d)-1/4*a*ln(d*x^
2+c)/c/(a^2*c-d)+1/2*arccot(a*x)*arctan(x*d^(1/2)/c^(1/2))/c^(3/2)/d^(1/2)+
1/8*I*a*ln(-(1+x*(-a^2)^(1/2))*d^(1/2)/(I*(-a^2)^(1/2)*c^(1/2)-d^(1/2)))*ln
(1-I*x*d^(1/2)/c^(1/2))/c^(3/2)/(-a^2)^(1/2)/d^(1/2)-1/8*I*a*ln((1-x*(-a^2)
^(1/2))*d^(1/2)/(I*(-a^2)^(1/2)*c^(1/2)+d^(1/2)))*ln(1-I*x*d^(1/2)/c^(1/2))
/c^(3/2)/(-a^2)^(1/2)/d^(1/2)+1/8*I*a*ln(-(1-x*(-a^2)^(1/2))*d^(1/2)/(I*(-a
^2)^(1/2)*c^(1/2)-d^(1/2)))*ln(1+I*x*d^(1/2)/c^(1/2))/c^(3/2)/(-a^2)^(1/2)/
d^(1/2)-1/8*I*a*ln((1+x*(-a^2)^(1/2))*d^(1/2)/(I*(-a^2)^(1/2)*c^(1/2)+d^(1/
2)))*ln(1+I*x*d^(1/2)/c^(1/2))/c^(3/2)/(-a^2)^(1/2)/d^(1/2)-1/8*I*a*polylog
(2,(-a^2)^(1/2)*(c^(1/2)-I*x*d^(1/2))/((-a^2)^(1/2)*c^(1/2)-I*d^(1/2)))/c^(
3/2)/(-a^2)^(1/2)/d^(1/2)+1/8*I*a*polylog(2,(-a^2)^(1/2)*(c^(1/2)-I*x*d^(1/
2))/((-a^2)^(1/2)*c^(1/2)+I*d^(1/2)))/c^(3/2)/(-a^2)^(1/2)/d^(1/2)-1/8*I*a*
polylog(2,(-a^2)^(1/2)*(c^(1/2)+I*x*d^(1/2))/((-a^2)^(1/2)*c^(1/2)-I*d^(1/2
)))/c^(3/2)/(-a^2)^(1/2)/d^(1/2)+1/8*I*a*polylog(2,(-a^2)^(1/2)*(c^(1/2)+I*
x*d^(1/2))/((-a^2)^(1/2)*c^(1/2)+I*d^(1/2)))/c^(3/2)/(-a^2)^(1/2)/d^(1/2)
```

Rubi [A] time = 1.16, antiderivative size = 801, normalized size of antiderivative = 1.00, number of steps used = 24, number of rules used = 12, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.857, Rules used = {199, 205, 4913, 6725, 444, 36, 31, 4908, 2409, 2394, 2393, 2391}

$$\frac{\tan^{-1}\left(\frac{\sqrt{d}x}{\sqrt{c}}\right)\cot^{-1}(ax)}{2c^{3/2}\sqrt{d}}+\frac{x\cot^{-1}(ax)}{2c\left(dx^2+c\right)}-\frac{ia\log\left(\frac{\sqrt{d}\left(1-\sqrt{-a^2}x\right)}{i\sqrt{-a^2}\sqrt{c}+\sqrt{d}}\right)\log\left(1-\frac{i\sqrt{d}x}{\sqrt{c}}\right)}{8\sqrt{-a^2}c^{3/2}\sqrt{d}}+\frac{ia\log\left(-\frac{\sqrt{d}\left(\sqrt{-a^2}x+1\right)}{i\sqrt{-a^2}\sqrt{c}-\sqrt{d}}\right)\log\left(1-\frac{i\sqrt{}}{\sqrt{}}\right.}{8\sqrt{-a^2}c^{3/2}\sqrt{d}}$$

Antiderivative was successfully verified.

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

```
[Out] (x*ArcCot[a*x])/(2*c*(c + d*x^2)) + (ArcCot[a*x]*ArcTan[(Sqrt[d]*x)/Sqrt[c]
])/(2*c^(3/2)*Sqrt[d]) - ((I/8)*a*Log[(Sqrt[d]*(1 - Sqrt[-a^2]*x))/(I*Sqrt[
-a^2]*Sqrt[c] + Sqrt[d])]*Log[1 - (I*Sqrt[d]*x)/Sqrt[c]])/(Sqrt[-a^2]*c^(3/
2)*Sqrt[d]) + ((I/8)*a*Log[-((Sqrt[d]*(1 + Sqrt[-a^2]*x))/(I*Sqrt[-a^2]*Sqr
t[c] - Sqrt[d]))]*Log[1 - (I*Sqrt[d]*x)/Sqrt[c]])/(Sqrt[-a^2]*c^(3/2)*Sqrt[
d]) + ((I/8)*a*Log[-((Sqrt[d]*(1 - Sqrt[-a^2]*x))/(I*Sqrt[-a^2]*Sqrt[c] - S
qrt[d]))]*Log[1 + (I*Sqrt[d]*x)/Sqrt[c]])/(Sqrt[-a^2]*c^(3/2)*Sqrt[d]) - ((
I/8)*a*Log[(Sqrt[d]*(1 + Sqrt[-a^2]*x))/(I*Sqrt[-a^2]*Sqrt[c] + Sqrt[d])]*L
og[1 + (I*Sqrt[d]*x)/Sqrt[c]])/(Sqrt[-a^2]*c^(3/2)*Sqrt[d]) + (a*Log[1 + a^
2*x^2])/(4*c*(a^2*c - d)) - (a*Log[c + d*x^2])/(4*c*(a^2*c - d)) - ((I/8)*a
*PolyLog[2, (Sqrt[-a^2]*(Sqrt[c] - I*Sqrt[d]*x))/(Sqrt[-a^2]*Sqrt[c] - I*Sq
rt[d])])/(Sqrt[-a^2]*c^(3/2)*Sqrt[d]) + ((I/8)*a*PolyLog[2, (Sqrt[-a^2]*(Sq
rt[c] - I*Sqrt[d]*x))/(Sqrt[-a^2]*Sqrt[c] + I*Sqrt[d])])/(Sqrt[-a^2]*c^(3/2
)*Sqrt[d]) - ((I/8)*a*PolyLog[2, (Sqrt[-a^2]*(Sqrt[c] + I*Sqrt[d]*x))/(Sqrt
[-a^2]*Sqrt[c] - I*Sqrt[d])])/(Sqrt[-a^2]*c^(3/2)*Sqrt[d]) + ((I/8)*a*PolyL
og[2, (Sqrt[-a^2]*(Sqrt[c] + I*Sqrt[d]*x))/(Sqrt[-a^2]*Sqrt[c] + I*Sqrt[d])
])/(Sqrt[-a^2]*c^(3/2)*Sqrt[d])
```

Rule 31

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

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
 x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 199

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> -Simp[(x*(a + b*x^n)^(p + 1
))/(a*n*(p + 1)), x] + Dist[(n*(p + 1) + 1)/(a*n*(p + 1)), Int[(a + b*x^n)^
(p + 1), x], x] /; FreeQ[{a, b}, x] && IGtQ[n, 0] && LtQ[p, -1] && (Integer
Q[2*p] || (n == 2 && IntegerQ[4*p]) || (n == 2 && IntegerQ[3*p]) || Denomin
ator[p + 1/n] < Denominator[p])
```

Rule 205

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

Rule 444

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.)*((c_) + (d_.)*(x_)^(n_))^(q_.
), x_Symbol] :> Dist[1/n, Subst[Int[(a + b*x)^p*(c + d*x)^q, x], x, x^n], x
] /; FreeQ[{a, b, c, d, m, n, p, q}, x] && NeQ[b*c - a*d, 0] && EqQ[m - n +
 1, 0]
```

Rule 2391

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

Rule 2393

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

Rule 2394

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

Rule 2409

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_)^(r_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*Log[c*(d + e*x)
^n])^p, (f + g*x^r)^q, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, r}, x] && I
GtQ[p, 0] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[r] && NeQ[r, 1]))
```

Rule 4908

```
Int[ArcTan[(c_.)*(x_)]/((d_.) + (e_.)*(x_)^2), x_Symbol] :> Dist[I/2, Int[L
og[1 - I*c*x]/(d + e*x^2), x], x] - Dist[I/2, Int[Log[1 + I*c*x]/(d + e*x^2
```

```
), x], x] /; FreeQ[{c, d, e}, x]
```

Rule 4913

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))*((d_.) + (e_.)*(x_)^2)^(q_.), x_Symb
ol] :> With[{u = IntHide[(d + e*x^2)^q, x]}, Dist[a + b*ArcCot[c*x], u, x]
+ Dist[b*c, Int[u/(1 + c^2*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && (I
ntegerQ[q] || ILtQ[q + 1/2, 0])
```

Rule 6725

```
Int[(u_)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> With[{v = RationalFunctionE
xpand[u/(a + b*x^n), x]}, Int[v, x] /; SumQ[v]] /; FreeQ[{a, b}, x] && IGtQ
[n, 0]
```

Rubi steps

$$\int \frac{\cot^{-1}(ax)}{\left(c+dx^2\right)^2}\,dx = \frac{x\cot^{-1}(ax)}{2c\left(c+dx^2\right)} + \frac{\cot^{-1}(ax)\tan^{-1}\left(\frac{\sqrt{d}\,x}{\sqrt{c}}\right)}{2c^{3/2}\sqrt{d}} + a\int \frac{\frac{x}{2c\left(c+dx^2\right)} + \frac{\tan^{-1}\left(\frac{\sqrt{d}\,x}{\sqrt{c}}\right)}{2c^{3/2}\sqrt{d}}}{1+a^2x^2}\,dx$$

$$= \frac{x\cot^{-1}(ax)}{2c\left(c+dx^2\right)} + \frac{\cot^{-1}(ax)\tan^{-1}\left(\frac{\sqrt{d}\,x}{\sqrt{c}}\right)}{2c^{3/2}\sqrt{d}} + a\int \left(\frac{x}{2c\left(1+a^2x^2\right)\left(c+dx^2\right)} + \frac{\tan^{-1}\left(\frac{\sqrt{d}\,x}{\sqrt{c}}\right)}{2c^{3/2}\sqrt{d}\left(1+a^2x^2\right)}\right)$$

$$= \frac{x\cot^{-1}(ax)}{2c\left(c+dx^2\right)} + \frac{\cot^{-1}(ax)\tan^{-1}\left(\frac{\sqrt{d}\,x}{\sqrt{c}}\right)}{2c^{3/2}\sqrt{d}} + \frac{a\int \frac{x}{(1+a^2x^2)(c+dx^2)}\,dx}{2c} + \frac{a\int \frac{\tan^{-1}\left(\frac{\sqrt{d}\,x}{\sqrt{c}}\right)}{1+a^2x^2}\,dx}{2c^{3/2}\sqrt{d}}$$

$$= \frac{x\cot^{-1}(ax)}{2c\left(c+dx^2\right)} + \frac{\cot^{-1}(ax)\tan^{-1}\left(\frac{\sqrt{d}\,x}{\sqrt{c}}\right)}{2c^{3/2}\sqrt{d}} + \frac{a\,\text{Subst}\left(\int \frac{1}{(1+a^2x)(c+dx)}\,dx, x, x^2\right)}{4c} + \frac{(ia)\int \frac{\log\left(1-\frac{i\sqrt{d}\,x}{\sqrt{c}}\right)}{1+a^2x^2}}{4c^{3/2}\sqrt{d}}$$

$$= \frac{x\cot^{-1}(ax)}{2c\left(c+dx^2\right)} + \frac{\cot^{-1}(ax)\tan^{-1}\left(\frac{\sqrt{d}\,x}{\sqrt{c}}\right)}{2c^{3/2}\sqrt{d}} + \frac{a^3\,\text{Subst}\left(\int \frac{1}{1+a^2x}\,dx, x, x^2\right)}{4c\left(a^2c-d\right)} + \frac{(ia)\int \left(\frac{\log\left(1-\frac{i\sqrt{d}\,x}{\sqrt{c}}\right)}{2\left(1-\sqrt{-a^2}\,x\right)} + \cdots\right.}{4c^{3/2}\sqrt{d}}$$

$$= \frac{x\cot^{-1}(ax)}{2c\left(c+dx^2\right)} + \frac{\cot^{-1}(ax)\tan^{-1}\left(\frac{\sqrt{d}\,x}{\sqrt{c}}\right)}{2c^{3/2}\sqrt{d}} + \frac{a\log\left(1+a^2x^2\right)}{4c\left(a^2c-d\right)} - \frac{a\log\left(c+dx^2\right)}{4c\left(a^2c-d\right)} + \frac{(ia)\int \frac{\log\left(1-\frac{i\sqrt{d}\,x}{\sqrt{c}}\right)}{1-\sqrt{-a^2}\,x}}{8c^{3/2}\sqrt{d}}$$

$$= \frac{x\cot^{-1}(ax)}{2c\left(c+dx^2\right)} + \frac{\cot^{-1}(ax)\tan^{-1}\left(\frac{\sqrt{d}\,x}{\sqrt{c}}\right)}{2c^{3/2}\sqrt{d}} - \frac{ia\log\left(\frac{\sqrt{d}\left(1-\sqrt{-a^2}\,x\right)}{i\sqrt{-a^2}\sqrt{c}+\sqrt{d}}\right)\log\left(1-\frac{i\sqrt{d}\,x}{\sqrt{c}}\right)}{8\sqrt{-a^2}\,c^{3/2}\sqrt{d}} + \frac{ia\log\left(-\frac{\sqrt{d}\left(1\cdots\right.}{i\sqrt{-a^2}\cdots}\right.}{8\cdots}$$

$$= \frac{x\cot^{-1}(ax)}{2c\left(c+dx^2\right)} + \frac{\cot^{-1}(ax)\tan^{-1}\left(\frac{\sqrt{d}\,x}{\sqrt{c}}\right)}{2c^{3/2}\sqrt{d}} - \frac{ia\log\left(\frac{\sqrt{d}\left(1-\sqrt{-a^2}\,x\right)}{i\sqrt{-a^2}\sqrt{c}+\sqrt{d}}\right)\log\left(1-\frac{i\sqrt{d}\,x}{\sqrt{c}}\right)}{8\sqrt{-a^2}\,c^{3/2}\sqrt{d}} + \frac{ia\log\left(-\frac{\sqrt{d}\left(1\cdots\right.}{i\sqrt{-a^2}\cdots}\right.}{8\cdots}$$

$$= \frac{x\cot^{-1}(ax)}{2c\left(c+dx^2\right)} + \frac{\cot^{-1}(ax)\tan^{-1}\left(\frac{\sqrt{d}\,x}{\sqrt{c}}\right)}{2c^{3/2}\sqrt{d}} - \frac{ia\log\left(\frac{\sqrt{d}\left(1-\sqrt{-a^2}\,x\right)}{i\sqrt{-a^2}\sqrt{c}+\sqrt{d}}\right)\log\left(1-\frac{i\sqrt{d}\,x}{\sqrt{c}}\right)}{8\sqrt{-a^2}\,c^{3/2}\sqrt{d}} + \frac{ia\log\left(-\frac{\sqrt{d}\left(1\cdots\right.}{i\sqrt{-a^2}\cdots}\right.}{8\cdots}$$

Mathematica [A] time = 8.26, size = 806, normalized size = 1.01

$$-\frac{a\left(\frac{2\log\left(\frac{ca^2+d+\left(d-a^2c\right)\cos\left(2\cot^{-1}(ax)\right)}{ca^2+d}\right)}{a^2c-d} + \frac{2\cos^{-1}\left(\frac{ca^2+d}{a^2c-d}\right)\tanh^{-1}\left(\frac{ac}{\sqrt{-a^2cd}\,x}\right)+4\cot^{-1}(ax)\tanh^{-1}\left(\frac{adx}{\sqrt{-a^2cd}}\right)+\left(\cos^{-1}\left(\frac{ca^2+d}{a^2c-d}\right)-2i\tanh^{-1}\left(\frac{ac}{\sqrt{-a^2cd}\,x}\right)\right)\cdots}{\cdots}\right.}{\cdots}$$

Warning: Unable to verify antiderivative.

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

```
[Out] -1/8*(a*((2*Log[(a^2*c + d + (-(a^2*c) + d)*Cos[2*ArcCot[a*x]])/(a^2*c + d)
])/(a^2*c - d) + (2*ArcCos[(a^2*c + d)/(a^2*c - d)]*ArcTanh[(a*c)/(Sqrt[-(a
^2*c*d)]*x)] + 4*ArcCot[a*x]*ArcTanh[(a*d*x)/Sqrt[-(a^2*c*d)]] + (ArcCos[(a
^2*c + d)/(a^2*c - d)] - (2*I)*ArcTanh[(a*c)/(Sqrt[-(a^2*c*d)]*x)])*Log[((2
*I)*d*(I*a^2*c + Sqrt[-(a^2*c*d)])*(I + a*x))/((a^2*c - d)*(Sqrt[-(a^2*c*d)
] - a*d*x))] + (ArcCos[(a^2*c + d)/(a^2*c - d)] + (2*I)*ArcTanh[(a*c)/(Sqrt
[-(a^2*c*d)]*x)])*Log[(2*d*(a^2*c + I*Sqrt[-(a^2*c*d)])*(-I + a*x))/((a^2*c
 - d)*(-Sqrt[-(a^2*c*d)] + a*d*x))] - (ArcCos[(a^2*c + d)/(a^2*c - d)] + (2
*I)*ArcTanh[(a*c)/(Sqrt[-(a^2*c*d)]*x)] + (2*I)*ArcTanh[(a*d*x)/Sqrt[-(a^2*
c*d)]])*Log[(Sqrt[2]*Sqrt[-(a^2*c*d)])/(Sqrt[a^2*c - d]*E^(I*ArcCot[a*x])*S
qrt[-(a^2*c) - d + (a^2*c - d)*Cos[2*ArcCot[a*x]]])] - (ArcCos[(a^2*c + d)/
(a^2*c - d)] - (2*I)*ArcTanh[(a*c)/(Sqrt[-(a^2*c*d)]*x)] - (2*I)*ArcTanh[(a
*d*x)/Sqrt[-(a^2*c*d)]])*Log[(Sqrt[2]*Sqrt[-(a^2*c*d)]*E^(I*ArcCot[a*x]))/(
Sqrt[a^2*c - d]*Sqrt[-(a^2*c) - d + (a^2*c - d)*Cos[2*ArcCot[a*x]]])] + I*(
PolyLog[2, ((a^2*c + d - (2*I)*Sqrt[-(a^2*c*d)])*(Sqrt[-(a^2*c*d)] + a*d*x)
)/((a^2*c - d)*(Sqrt[-(a^2*c*d)] - a*d*x))] - PolyLog[2, ((a^2*c + d + (2*I
)*Sqrt[-(a^2*c*d)])*(Sqrt[-(a^2*c*d)] + a*d*x))/((a^2*c - d)*(Sqrt[-(a^2*c*
d)] - a*d*x))]))/Sqrt[-(a^2*c*d)] - (4*ArcCot[a*x]*Sin[2*ArcCot[a*x]])/(a^2
*c + d + (-(a^2*c) + d)*Cos[2*ArcCot[a*x]])))/c
```

fricas [F] time = 0.69, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\operatorname{arccot}(ax)}{d^2x^4 + 2\,cdx^2 + c^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integral(arccot(a*x)/(d^2*x^4 + 2*c*d*x^2 + c^2), x)
```

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

$$\int \frac{\operatorname{arccot}(ax)}{\left(dx^2 + c\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate(arccot(a*x)/(d*x^2 + c)^2, x)
```

maple [B] time = 0.80, size = 2177, normalized size = 2.72

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/8/a*(a^2*c*d)^(1/2)/c^2/(a^2*c-d)*polylog(2,(a^2*c-d)*(I+a*x)^2/(a^2*x^2
+1)/(a^2*c-2*(a^2*c*d)^(1/2)+d))+3/8*a^3/(a^4*c^2-2*a^2*c*d+d^2)/(a^2*c-d)*
polylog(2,(a^2*c-d)*(I+a*x)^2/(a^2*x^2+1)/(a^2*c+2*(a^2*c*d)^(1/2)+d))*(a^2
*c*d)^(1/2)+1/2*a^4*arccot(a*x)/(a^2*c-d)/(a^2*d*x^2+a^2*c)*x+1/4*(d*c)^(1/
2)/c^2*d*arctanh(1/4*(2*(a^2*c-d)*(I+a*x)^2/(a^2*x^2+1)-2*a^2*c-2*d)/a/(d*c
)^(1/2))/(a^2*c-d)^2-1/2*I*a^3*arccot(a*x)/(a^2*c-d)/(a^2*d*x^2+a^2*c)+1/4*
(d*c)^(1/2)/c^2*arctanh(1/4*(2*(a^2*c-d)*(I+a*x)^2/(a^2*x^2+1)-2*a^2*c-2*d)
/a/(d*c)^(1/2))/(a^2*c-d)+3/4*I*a^3*ln(1-(a^2*c-d)*(I+a*x)^2/(a^2*x^2+1)/(a
^2*c+2*(a^2*c*d)^(1/2)+d))*arccot(a*x)/(a^4*c^2-2*a^2*c*d+d^2)/(a^2*c-d)*(a
^2*c*d)^(1/2)-1/4*I/a*(a^2*c*d)^(1/2)/c^2/(a^2*c-d)*arccot(a*x)*ln(1-(a^2*c
-d)*(I+a*x)^2/(a^2*x^2+1)/(a^2*c-2*(a^2*c*d)^(1/2)+d))-1/4*a^3/(a^2*c-d)^2*
```

```
ln((I+a*x)^4/(a^2*x^2+1)^2*a^2*c-2*a^2*c*(I+a*x)^2/(a^2*x^2+1)-(I+a*x)^4/(a
^2*x^2+1)^2*d+a^2*c-2*(I+a*x)^2/(a^2*x^2+1)*d-d)+1/8*a*(a^2*c*d)^(1/2)/(a^2
*c-d)/c/d*polylog(2,(a^2*c-d)*(I+a*x)^2/(a^2*x^2+1)/(a^2*c-2*(a^2*c*d)^(1/2
)+d))+1/4*a*(a^2*c*d)^(1/2)/(a^2*c-d)/c/d*arccot(a*x)^2+1/4*a^2*(d*c)^(1/2)
/d/c*arctanh(1/4*(2*(a^2*c-d)*(I+a*x)^2/(a^2*x^2+1)-2*a^2*c-2*d)/a/(d*c)^(1
/2))/(a^2*c-d)+a^3/(a^2*c-d)^2*ln((I+a*x)/(a^2*x^2+1)^(1/2))-1/4*a^4*(d*c)^
(1/2)/d*arctanh(1/4*(2*(a^2*c-d)*(I+a*x)^2/(a^2*x^2+1)-2*a^2*c-2*d)/a/(d*c)
^(1/2))/(a^2*c-d)^2-3/4*I*a*ln(1-(a^2*c-d)*(I+a*x)^2/(a^2*x^2+1)/(a^2*c+2*(
a^2*c*d)^(1/2)+d))*arccot(a*x)*d/(a^2*c-d)/c/(a^4*c^2-2*a^2*c*d+d^2)*(a^2*c
*d)^(1/2)-1/4*I*a^5*ln(1-(a^2*c-d)*(I+a*x)^2/(a^2*x^2+1)/(a^2*c+2*(a^2*c*d)
^(1/2)+d))*arccot(a*x)/(a^2*c-d)/d/(a^4*c^2-2*a^2*c*d+d^2)*(a^2*c*d)^(1/2)*
c+1/4*I/a*d^2*ln(1-(a^2*c-d)*(I+a*x)^2/(a^2*x^2+1)/(a^2*c+2*(a^2*c*d)^(1/2)
+d))*arccot(a*x)/c^2/(a^2*c-d)/(a^4*c^2-2*a^2*c*d+d^2)*(a^2*c*d)^(1/2)-1/8*
a^5/(a^2*c-d)/d/(a^4*c^2-2*a^2*c*d+d^2)*polylog(2,(a^2*c-d)*(I+a*x)^2/(a^2*
x^2+1)/(a^2*c+2*(a^2*c*d)^(1/2)+d))*(a^2*c*d)^(1/2)*c+1/8/a/c^2*d^2/(a^2*c-
d)/(a^4*c^2-2*a^2*c*d+d^2)*polylog(2,(a^2*c-d)*(I+a*x)^2/(a^2*x^2+1)/(a^2*c
+2*(a^2*c*d)^(1/2)+d))*(a^2*c*d)^(1/2)-3/8*a/(a^2*c-d)/c/(a^4*c^2-2*a^2*c*d
+d^2)*d*polylog(2,(a^2*c-d)*(I+a*x)^2/(a^2*x^2+1)/(a^2*c+2*(a^2*c*d)^(1/2)+
d))*(a^2*c*d)^(1/2)-1/4*a^5/(a^2*c-d)/d/(a^4*c^2-2*a^2*c*d+d^2)*arccot(a*x)
^2*(a^2*c*d)^(1/2)*c-3/4*a/(a^2*c-d)/c/(a^4*c^2-2*a^2*c*d+d^2)*d*arccot(a*x
)^2*(a^2*c*d)^(1/2)+1/4/a/c^2*d^2/(a^2*c-d)/(a^4*c^2-2*a^2*c*d+d^2)*arccot(
a*x)^2*(a^2*c*d)^(1/2)-1/2*a^2*arccot(a*x)/c/(a^2*c-d)/(a^2*d*x^2+a^2*c)*x*
d-a/c/(a^2*c-d)^2*d*ln((I+a*x)/(a^2*x^2+1)^(1/2))+1/4*a/c/(a^2*c-d)^2*d*ln(
(I+a*x)^4/(a^2*x^2+1)^2*a^2*c-2*a^2*c*(I+a*x)^2/(a^2*x^2+1)-(I+a*x)^4/(a^2*
x^2+1)^2*d+a^2*c-2*(I+a*x)^2/(a^2*x^2+1)*d-d)+3/4*a^3/(a^2*c-d)/(a^4*c^2-2*
a^2*c*d+d^2)*arccot(a*x)^2*(a^2*c*d)^(1/2)-1/4/a*(a^2*c*d)^(1/2)/c^2/(a^2*c
-d)*arccot(a*x)^2-1/2*I*a^3*arccot(a*x)/c/(a^2*c-d)/(a^2*d*x^2+a^2*c)*x^2*d
+1/4*I*a*(a^2*c*d)^(1/2)/(a^2*c-d)/c/d*arccot(a*x)*ln(1-(a^2*c-d)*(I+a*x)^2
/(a^2*x^2+1)/(a^2*c-2*(a^2*c*d)^(1/2)+d))
```

maxima [A] time = 0.55, size = 628, normalized size = 0.78

$$\frac{1}{2}\left(\frac{x}{cdx^2+c^2}+\frac{\arctan\left(\frac{dx}{\sqrt{cd}}\right)}{\sqrt{cd}\,c}\right)\operatorname{arccot}(ax)+\frac{\left(4\,acd\log\left(a^2x^2+1\right)-4\,acd\log\left(dx^2+c\right)+\left(4\left(a^2c-d\right)\arctan(ax)\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/2*(x/(c*d*x^2 + c^2) + arctan(d*x/sqrt(c*d))/(sqrt(c*d)*c))*arccot(a*x) +
 1/16*(4*a*c*d*log(a^2*x^2 + 1) - 4*a*c*d*log(d*x^2 + c) + (4*(a^2*c - d)*a
rctan(a*x)*arctan(sqrt(d)*x/sqrt(c)) + 4*(a^2*c - d)*arctan(sqrt(d)*x/sqrt(
c))*arctan2(-a*sqrt(d)*x/(a*sqrt(c) - sqrt(d)), -sqrt(d)/(a*sqrt(c) - sqrt(
d))) + (a^2*c - d)*log(d*x^2 + c)*log((a^2*c*d + (a^4*c*d + a^2*d^2)*x^2 +
2*(a^3*d*x^2 + a*d)*sqrt(c)*sqrt(d) + d^2)/(a^4*c^2 + 6*a^2*c*d + 4*(a^3*c
+ a*d)*sqrt(c)*sqrt(d) + d^2)) - (a^2*c - d)*log(d*x^2 + c)*log((a^2*c*d +
(a^4*c*d + a^2*d^2)*x^2 - 2*(a^3*d*x^2 + a*d)*sqrt(c)*sqrt(d) + d^2)/(a^4*c
^2 + 6*a^2*c*d - 4*(a^3*c + a*d)*sqrt(c)*sqrt(d) + d^2)) + 2*(a^2*c - d)*di
log((a^2*c + I*a*d*x + (I*a^2*x + a)*sqrt(c)*sqrt(d))/(a^2*c + 2*a*sqrt(c)*
sqrt(d) + d)) + 2*(a^2*c - d)*dilog((a^2*c - I*a*d*x - (I*a^2*x - a)*sqrt(c
)*sqrt(d))/(a^2*c + 2*a*sqrt(c)*sqrt(d) + d)) - 2*(a^2*c - d)*dilog((a^2*c
+ I*a*d*x - (I*a^2*x + a)*sqrt(c)*sqrt(d))/(a^2*c - 2*a*sqrt(c)*sqrt(d) + d
)) - 2*(a^2*c - d)*dilog((a^2*c - I*a*d*x + (I*a^2*x - a)*sqrt(c)*sqrt(d))/
(a^2*c - 2*a*sqrt(c)*sqrt(d) + d)))*sqrt(c)*sqrt(d))*a/(a^3*c^3*d - a*c^2*d
^2)
```

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

$$\int \frac{\operatorname{acot}(a\,x)}{\left(d\,x^2+c\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Timed out
```

3.59 $\int \sqrt{c+dx^2}\,\cot^{-1}(ax)\,dx$

Optimal. Leaf size=19

$$\text{Int}\left(\cot^{-1}(ax)\sqrt{c+dx^2},x\right)$$

```
[Out] Unintegrable((d*x^2+c)^(1/2)*arccot(a*x),x)
```

Rubi [A] time = 0.02, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \sqrt{c+dx^2}\,\cot^{-1}(ax)\,dx$$

Verification is Not applicable to the result.

```
[In] Int[Sqrt[c + d*x^2]*ArcCot[a*x],x]
[Out] Defer[Int][Sqrt[c + d*x^2]*ArcCot[a*x], x]
```

Rubi steps

$$\int \sqrt{c+dx^2}\,\cot^{-1}(ax)\,dx=\int \sqrt{c+dx^2}\,\cot^{-1}(ax)\,dx$$

Mathematica [A] time = 6.84, size = 0, normalized size = 0.00

$$\int \sqrt{c+dx^2}\,\cot^{-1}(ax)\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[Sqrt[c + d*x^2]*ArcCot[a*x],x]
[Out] Integrate[Sqrt[c + d*x^2]*ArcCot[a*x], x]
```

fricas [A] time = 0.59, size = 0, normalized size = 0.00

$$\text{integral}\left(\sqrt{dx^2+c}\,\text{arccot}\,(ax)\,,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x^2+c)^(1/2)*arccot(a*x),x, algorithm="fricas")
[Out] integral(sqrt(d*x^2 + c)*arccot(a*x), x)
```

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

$$\int \sqrt{dx^2+c}\,\text{arccot}\,(ax)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x^2+c)^(1/2)*arccot(a*x),x, algorithm="giac")
[Out] integrate(sqrt(d*x^2 + c)*arccot(a*x), x)
```

maple [A] time = 1.40, size = 0, normalized size = 0.00

$$\int \sqrt{d\,x^2+c}\,\text{arccot}\,(ax)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x^2+c)^(1/2)*arccot(a*x),x)
```

```
[Out] int((d*x^2+c)^(1/2)*arccot(a*x),x)
```

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

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x^2+c)^(1/2)*arccot(a*x),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(d-a^2*c>0)', see `assume?` for more
 details)Is d-a^2*c positive or negative?
```

mupad [**A**] time = 0.00, size = -1, normalized size = -0.05

$$\int \operatorname{acot}(a\,x)\,\sqrt{d\,x^2+c}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(acot(a*x)*(c + d*x^2)^(1/2),x)
```

```
[Out] int(acot(a*x)*(c + d*x^2)^(1/2), x)
```

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

$$\int \sqrt{c+dx^2}\,\operatorname{acot}(ax)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x**2+c)**(1/2)*acot(a*x),x)
```

```
[Out] Integral(sqrt(c + d*x**2)*acot(a*x), x)
```

3.60 $\int \frac{\cot^{-1}(ax)}{\sqrt{c+dx^2}}\,dx$

Optimal. Leaf size=19

$$\operatorname{Int}\left(\frac{\cot^{-1}(ax)}{\sqrt{c+dx^2}},x\right)$$

```
[Out] Unintegrable(arccot(a*x)/(d*x^2+c)^(1/2),x)
```

Rubi [A] time = 0.02, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\cot^{-1}(ax)}{\sqrt{c+dx^2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[ArcCot[a*x]/Sqrt[c + d*x^2],x]
```

```
[Out] Defer[Int][ArcCot[a*x]/Sqrt[c + d*x^2], x]
```

Rubi steps

$$\int \frac{\cot^{-1}(ax)}{\sqrt{c+dx^2}}\,dx = \int \frac{\cot^{-1}(ax)}{\sqrt{c+dx^2}}\,dx$$

Mathematica [A] time = 4.23, size = 0, normalized size = 0.00

$$\int \frac{\cot^{-1}(ax)}{\sqrt{c+dx^2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[ArcCot[a*x]/Sqrt[c + d*x^2],x]
```

```
[Out] Integrate[ArcCot[a*x]/Sqrt[c + d*x^2], x]
```

fricas [A] time = 0.96, size = 0, normalized size = 0.00

$$\operatorname{integral}\left(\frac{\operatorname{arccot}(ax)}{\sqrt{dx^2+c}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(a*x)/(d*x^2+c)^(1/2),x, algorithm="fricas")
```

```
[Out] integral(arccot(a*x)/sqrt(d*x^2 + c), x)
```

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

$$\int \frac{\operatorname{arccot}(ax)}{\sqrt{dx^2+c}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(a*x)/(d*x^2+c)^(1/2),x, algorithm="giac")
```

```
[Out] integrate(arccot(a*x)/sqrt(d*x^2 + c), x)
```

maple [A] time = 1.29, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{arccot}(ax)}{\sqrt{d\,x^2 + c}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

$$\int \frac{\operatorname{arccot}(ax)}{\sqrt{dx^2 + c}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(a*x)/(d*x^2+c)^(1/2),x, algorithm="maxima")
[Out] integrate(arccot(a*x)/sqrt(d*x^2 + c), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.05

$$\int \frac{\operatorname{acot}(a\,x)}{\sqrt{d\,x^2 + c}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

$$\int \frac{\operatorname{acot}(ax)}{\sqrt{c + dx^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(acot(a*x)/(d*x**2+c)**(1/2),x)
[Out] Integral(acot(a*x)/sqrt(c + d*x**2), x)
```

3.61 $\int \frac{\cot^{-1}(ax)}{\left(c+dx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=66

$$\frac{x\cot^{-1}(ax)}{c\sqrt{c+dx^2}}-\frac{\tanh^{-1}\left(\frac{a\sqrt{c+dx^2}}{\sqrt{a^2c-d}}\right)}{c\sqrt{a^2c-d}}$$

```
[Out] -arctanh(a*(d*x^2+c)^(1/2)/(a^2*c-d)^(1/2))/c/(a^2*c-d)^(1/2)+x*arccot(a*x)
/c/(d*x^2+c)^(1/2)
```

Rubi [A] time = 0.09, antiderivative size = 66, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 6, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.375, Rules used = {191, 4913, 12, 444, 63, 208}

$$\frac{x\cot^{-1}(ax)}{c\sqrt{c+dx^2}}-\frac{\tanh^{-1}\left(\frac{a\sqrt{c+dx^2}}{\sqrt{a^2c-d}}\right)}{c\sqrt{a^2c-d}}$$

Antiderivative was successfully verified.

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

```
[Out] (x*ArcCot[a*x])/(c*Sqrt[c + d*x^2]) - ArcTanh[(a*Sqrt[c + d*x^2])/Sqrt[a^2*
c - d]]/(c*Sqrt[a^2*c - d])
```

Rule 12

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

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 191

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^(p + 1)
)/a, x] /; FreeQ[{a, b, n, p}, x] && EqQ[1/n + p + 1, 0]
```

Rule 208

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

Rule 444

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.)*((c_) + (d_.)*(x_)^(n_))^(q_.
), x_Symbol] :> Dist[1/n, Subst[Int[(a + b*x)^p*(c + d*x)^q, x], x, x^n], x
] /; FreeQ[{a, b, c, d, m, n, p, q}, x] && NeQ[b*c - a*d, 0] && EqQ[m - n +
 1, 0]
```

Rule 4913

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))*((d_.) + (e_.)*(x_)^2)^(q_.), x_Symb
ol] :> With[{u = IntHide[(d + e*x^2)^q, x]}, Dist[a + b*ArcCot[c*x], u, x]
```

```
+ Dist[b*c, Int[u/(1 + c^2*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && (I
ntegerQ[q] || ILtQ[q + 1/2, 0])
```

Rubi steps

$$\begin{aligned}
\int \frac{\cot^{-1}(ax)}{\left(c+dx^2\right)^{3/2}}\,dx &= \frac{x\cot^{-1}(ax)}{c\sqrt{c+dx^2}}+a\int \frac{x}{c\left(1+a^2x^2\right)\sqrt{c+dx^2}}\,dx \\
&= \frac{x\cot^{-1}(ax)}{c\sqrt{c+dx^2}}+\frac{a\int \frac{x}{\left(1+a^2x^2\right)\sqrt{c+dx^2}}\,dx}{c} \\
&= \frac{x\cot^{-1}(ax)}{c\sqrt{c+dx^2}}+\frac{a\,\mathrm{Subst}\left(\int \frac{1}{\left(1+a^2x\right)\sqrt{c+dx}}\,dx,x,x^2\right)}{2c} \\
&= \frac{x\cot^{-1}(ax)}{c\sqrt{c+dx^2}}+\frac{a\,\mathrm{Subst}\left(\int \frac{1}{1-\frac{a^2c}{d}+\frac{a^2x^2}{d}}\,dx,x,\sqrt{c+dx^2}\right)}{cd} \\
&= \frac{x\cot^{-1}(ax)}{c\sqrt{c+dx^2}}-\frac{\tanh^{-1}\left(\frac{a\sqrt{c+dx^2}}{\sqrt{a^2c-d}}\right)}{c\sqrt{a^2c-d}}
\end{aligned}$$

Mathematica [C] time = 0.27, size = 169, normalized size = 2.56

$$\frac{\frac{2x\cot^{-1}(ax)}{\sqrt{c+dx^2}}+\frac{-\log\left(\frac{4ac\left(\sqrt{a^2c-d}\sqrt{c+dx^2}+ac-idx\right)}{(ax+i)\sqrt{a^2c-d}}\right)-\log\left(\frac{4ac\left(\sqrt{a^2c-d}\sqrt{c+dx^2}+ac+idx\right)}{(ax-i)\sqrt{a^2c-d}}\right)}{\sqrt{a^2c-d}}}{2c}$$

Antiderivative was successfully verified.

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

```
[Out] ((2*x*ArcCot[a*x])/Sqrt[c + d*x^2] + (-Log[(4*a*c*(a*c - I*d*x + Sqrt[a^2*c
 - d]*Sqrt[c + d*x^2]))/(Sqrt[a^2*c - d]*(I + a*x))] - Log[(4*a*c*(a*c + I*
d*x + Sqrt[a^2*c - d]*Sqrt[c + d*x^2]))/(Sqrt[a^2*c - d]*(-I + a*x))])/Sqrt
[a^2*c - d])/(2*c)
```

fricas [B] time = 1.47, size = 349, normalized size = 5.29

$$\left[\frac{4\left(a^2c-d\right)\sqrt{dx^2+c}\,x\,\mathrm{arccot}\left(ax\right)+\sqrt{a^2c-d}\left(dx^2+c\right)\log\left(\frac{a^4d^2x^4+8a^4c^2-8a^2cd+2\left(4a^4cd-3a^2d^2\right)x^2-4\left(a^3dx^2+2a^3c-ad\right)}{a^4x^4+2a^2x^2+1}\right.}{4\left(a^2c^3-c^2d+\left(a^2c^2d-cd^2\right)x^2\right)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] [1/4*(4*(a^2*c - d)*sqrt(d*x^2 + c)*x*arccot(a*x) + sqrt(a^2*c - d)*(d*x^2
+ c)*log((a^4*d^2*x^4 + 8*a^4*c^2 - 8*a^2*c*d + 2*(4*a^4*c*d - 3*a^2*d^2)*x
^2 - 4*(a^3*d*x^2 + 2*a^3*c - a*d)*sqrt(a^2*c - d)*sqrt(d*x^2 + c) + d^2)/(
a^4*x^4 + 2*a^2*x^2 + 1)))/(a^2*c^3 - c^2*d + (a^2*c^2*d - c*d^2)*x^2), 1/2
*(2*(a^2*c - d)*sqrt(d*x^2 + c)*x*arccot(a*x) - sqrt(-a^2*c + d)*(d*x^2 + c
)*arctan(-1/2*(a^2*d*x^2 + 2*a^2*c - d)*sqrt(-a^2*c + d)*sqrt(d*x^2 + c)/(a
^3*c^2 - a*c*d + (a^3*c*d - a*d^2)*x^2)))/(a^2*c^3 - c^2*d + (a^2*c^2*d - c
*d^2)*x^2)]
```

giac [A] time = 0.17, size = 59, normalized size = 0.89

$$\frac{x\arctan\left(\frac{1}{ax}\right)}{\sqrt{dx^2+c}\,c}+\frac{\arctan\left(\frac{\sqrt{dx^2+c}\,a}{\sqrt{-a^2c+d}}\right)}{\sqrt{-a^2c+d}\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] x*arctan(1/(a*x))/(sqrt(d*x^2 + c)*c) + arctan(sqrt(d*x^2 + c)*a/sqrt(-a^2*
c + d))/(sqrt(-a^2*c + d)*c)
```

maple [F] time = 1.20, size = 0, normalized size = 0.00

$$\int\frac{\operatorname{arccot}(ax)}{\left(d\,x^2+c\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] int(arccot(a*x)/(d*x^2+c)^(3/2),x)
```

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

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(d-a^2*c>0)', see `assume?` for more
 details)Is d-a^2*c positive or negative?
```

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

$$\int\frac{\operatorname{acot}(a\,x)}{\left(d\,x^2+c\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] int(acot(a*x)/(c + d*x^2)^(3/2), x)
```

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

$$\int\frac{\operatorname{acot}(ax)}{\left(c+dx^2\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(acot(a*x)/(d*x**2+c)**(3/2),x)
```

```
[Out] Integral(acot(a*x)/(c + d*x**2)**(3/2), x)
```

3.62 $\int \frac{\cot^{-1}(ax)}{\left(c+dx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=134

$$-\frac{\left(3a^2c-2d\right)\tanh^{-1}\left(\frac{a\sqrt{c+dx^2}}{\sqrt{a^2c-d}}\right)}{3c^2\left(a^2c-d\right)^{3/2}}+\frac{a}{3c\left(a^2c-d\right)\sqrt{c+dx^2}}+\frac{2x\cot^{-1}(ax)}{3c^2\sqrt{c+dx^2}}+\frac{x\cot^{-1}(ax)}{3c\left(c+dx^2\right)^{3/2}}$$

```
[Out] 1/3*x*arccot(a*x)/c/(d*x^2+c)^(3/2)-1/3*(3*a^2*c-2*d)*arctanh(a*(d*x^2+c)^(
1/2)/(a^2*c-d)^(1/2))/c^2/(a^2*c-d)^(3/2)+1/3*a/c/(a^2*c-d)/(d*x^2+c)^(1/2)
+2/3*x*arccot(a*x)/c^2/(d*x^2+c)^(1/2)
```

Rubi [A] time = 0.33, antiderivative size = 134, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 9, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.562, Rules used = {192, 191, 4913, 6688, 12, 571, 78, 63, 208}

$$-\frac{\left(3a^2c-2d\right)\tanh^{-1}\left(\frac{a\sqrt{c+dx^2}}{\sqrt{a^2c-d}}\right)}{3c^2\left(a^2c-d\right)^{3/2}}+\frac{a}{3c\left(a^2c-d\right)\sqrt{c+dx^2}}+\frac{2x\cot^{-1}(ax)}{3c^2\sqrt{c+dx^2}}+\frac{x\cot^{-1}(ax)}{3c\left(c+dx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[ArcCot[a*x]/(c + d*x^2)^(5/2),x]
```

```
[Out] a/(3*c*(a^2*c - d)*Sqrt[c + d*x^2]) + (x*ArcCot[a*x])/(3*c*(c + d*x^2)^(3/2
)) + (2*x*ArcCot[a*x])/(3*c^2*Sqrt[c + d*x^2]) - ((3*a^2*c - 2*d)*ArcTanh[(
a*Sqrt[c + d*x^2])/Sqrt[a^2*c - d]])/(3*c^2*(a^2*c - d)^(3/2))
```

Rule 12

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

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 191

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^(p + 1)
)/a, x] /; FreeQ[{a, b, n, p}, x] && EqQ[1/n + p + 1, 0]
```

Rule 192

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> -Simp[(x*(a + b*x^n)^(p + 1
))/(a*n*(p + 1)), x] + Dist[(n*(p + 1) + 1)/(a*n*(p + 1)), Int[(a + b*x^n)^
(p + 1), x], x] /; FreeQ[{a, b, n, p}, x] && ILtQ[Simplify[1/n + p + 1], 0]
 && NeQ[p, -1]
```

Rule 208

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

Rule 571

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

Rule 4913

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))*((d_.) + (e_.)*(x_)^2)^(q_.), x_Symb
ol] :> With[{u = IntHide[(d + e*x^2)^q, x]}, Dist[a + b*ArcCot[c*x], u, x]
+ Dist[b*c, Int[u/(1 + c^2*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && (I
ntegerQ[q] || ILtQ[q + 1/2, 0])
```

Rule 6688

```
Int[u_, x_Symbol] :> With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; Simpl
erIntegrandQ[v, u, x]]
```

Rubi steps

$$\int \frac{\cot^{-1}(ax)}{\left(c+dx^2\right)^{5/2}}\,dx = \frac{x\cot^{-1}(ax)}{3c\left(c+dx^2\right)^{3/2}} + \frac{2x\cot^{-1}(ax)}{3c^2\sqrt{c+dx^2}} + a\int \frac{\frac{x}{3c\left(c+dx^2\right)^{3/2}} + \frac{2x}{3c^2\sqrt{c+dx^2}}}{1+a^2x^2}\,dx$$

$$= \frac{x\cot^{-1}(ax)}{3c\left(c+dx^2\right)^{3/2}} + \frac{2x\cot^{-1}(ax)}{3c^2\sqrt{c+dx^2}} + a\int \frac{x\left(3c+2dx^2\right)}{3c^2\left(1+a^2x^2\right)\left(c+dx^2\right)^{3/2}}\,dx$$

$$= \frac{x\cot^{-1}(ax)}{3c\left(c+dx^2\right)^{3/2}} + \frac{2x\cot^{-1}(ax)}{3c^2\sqrt{c+dx^2}} + \frac{a\int \frac{x\left(3c+2dx^2\right)}{\left(1+a^2x^2\right)\left(c+dx^2\right)^{3/2}}\,dx}{3c^2}$$

$$= \frac{x\cot^{-1}(ax)}{3c\left(c+dx^2\right)^{3/2}} + \frac{2x\cot^{-1}(ax)}{3c^2\sqrt{c+dx^2}} + \frac{a\,\text{Subst}\left(\int \frac{3c+2dx}{\left(1+a^2x\right)(c+dx)^{3/2}}\,dx, x, x^2\right)}{6c^2}$$

$$= \frac{a}{3c\left(a^2c-d\right)\sqrt{c+dx^2}} + \frac{x\cot^{-1}(ax)}{3c\left(c+dx^2\right)^{3/2}} + \frac{2x\cot^{-1}(ax)}{3c^2\sqrt{c+dx^2}} + \frac{\left(a\left(3a^2c-2d\right)\right)\text{Subst}\left(\int \frac{\ }{\left(1+a^{2}\right.}\right.}{6c^2\left(a^2c-d\right)}$$

$$= \frac{a}{3c\left(a^2c-d\right)\sqrt{c+dx^2}} + \frac{x\cot^{-1}(ax)}{3c\left(c+dx^2\right)^{3/2}} + \frac{2x\cot^{-1}(ax)}{3c^2\sqrt{c+dx^2}} + \frac{\left(a\left(3a^2c-2d\right)\right)\text{Subst}\left(\int \frac{\ }{1-\frac{a^2c}{d}}\right.}{3c^2\left(a^2c-\right.}$$

$$= \frac{a}{3c\left(a^2c-d\right)\sqrt{c+dx^2}} + \frac{x\cot^{-1}(ax)}{3c\left(c+dx^2\right)^{3/2}} + \frac{2x\cot^{-1}(ax)}{3c^2\sqrt{c+dx^2}} - \frac{\left(3a^2c-2d\right)\tanh^{-1}\left(\frac{a\sqrt{c+dx^2}}{\sqrt{a^2c-d}}\right)}{3c^2\left(a^2c-d\right)^{3/2}}$$

Mathematica [C] time = 0.73, size = 262, normalized size = 1.96

$$-\frac{\frac{\left(3a^2c-2d\right)\log\left(\frac{12ac^2\sqrt{a^2c-d}\left(\sqrt{a^2c-d}\sqrt{c+dx^2}+ac-idx\right)}{(ax+i)\left(3a^2c-2d\right)}\right)}{\left(a^2c-d\right)^{3/2}} + \frac{\left(3a^2c-2d\right)\log\left(\frac{12ac^2\sqrt{a^2c-d}\left(\sqrt{a^2c-d}\sqrt{c+dx^2}+ac+idx\right)}{(ax-i)\left(3a^2c-2d\right)}\right)}{\left(a^2c-d\right)^{3/2}} - \frac{2ac}{\left(a^2c-d\right)\sqrt{c+dx^2}} - \frac{2x\cot^{-1}(a}{(c+d}}{6c^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcCot[a*x]/(c + d*x^2)^(5/2),x]
```

```
[Out] -1/6*((-2*a*c)/((a^2*c - d)*Sqrt[c + d*x^2]) - (2*x*(3*c + 2*d*x^2)*ArcCot[
a*x])/(c + d*x^2)^(3/2) + ((3*a^2*c - 2*d)*Log[(12*a*c^2*Sqrt[a^2*c - d]*(a
*c - I*d*x + Sqrt[a^2*c - d]*Sqrt[c + d*x^2]))/((3*a^2*c - 2*d)*(I + a*x))]
)/(a^2*c - d)^(3/2) + ((3*a^2*c - 2*d)*Log[(12*a*c^2*Sqrt[a^2*c - d]*(a*c +
 I*d*x + Sqrt[a^2*c - d]*Sqrt[c + d*x^2]))/((3*a^2*c - 2*d)*(-I + a*x))])/(
a^2*c - d)^(3/2))/c^2
```

fricas [B] time = 1.16, size = 712, normalized size = 5.31

$$\left[\frac{\left(3\,a^2c^3 + \left(3\,a^2cd^2 - 2\,d^3\right)x^4 - 2\,c^2d + 2\left(3\,a^2c^2d - 2\,cd^2\right)x^2\right)\sqrt{a^2c-d}\,\log\left(\frac{a^4d^2x^4+8\,a^4c^2-8\,a^2cd+2\left(4\,a^4cd-3\,a^2d^2\right)x^2-}{a^4x^4+2\,a^2}\right.}{12\left(a^4c^6 - 2\,a^2c^5d + c^4d^2\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(a*x)/(d*x^2+c)^(5/2),x, algorithm="fricas")
```

```
[Out] [1/12*((3*a^2*c^3 + (3*a^2*c*d^2 - 2*d^3)*x^4 - 2*c^2*d + 2*(3*a^2*c^2*d -
2*c*d^2)*x^2)*sqrt(a^2*c - d)*log((a^4*d^2*x^4 + 8*a^4*c^2 - 8*a^2*c*d + 2*
(4*a^4*c*d - 3*a^2*d^2)*x^2 - 4*(a^3*d*x^2 + 2*a^3*c - a*d)*sqrt(a^2*c - d)
*sqrt(d*x^2 + c) + d^2)/(a^4*x^4 + 2*a^2*x^2 + 1)) + 4*(a^3*c^3 - a*c^2*d +
 (a^3*c^2*d - a*c*d^2)*x^2 + (2*(a^4*c^2*d - 2*a^2*c*d^2 + d^3)*x^3 + 3*(a^
4*c^3 - 2*a^2*c^2*d + c*d^2)*x)*arccot(a*x))*sqrt(d*x^2 + c))/(a^4*c^6 - 2*
a^2*c^5*d + c^4*d^2 + (a^4*c^4*d^2 - 2*a^2*c^3*d^3 + c^2*d^4)*x^4 + 2*(a^4*
c^5*d - 2*a^2*c^4*d^2 + c^3*d^3)*x^2), -1/6*((3*a^2*c^3 + (3*a^2*c*d^2 - 2*
d^3)*x^4 - 2*c^2*d + 2*(3*a^2*c^2*d - 2*c*d^2)*x^2)*sqrt(-a^2*c + d)*arctan
(-1/2*(a^2*d*x^2 + 2*a^2*c - d)*sqrt(-a^2*c + d)*sqrt(d*x^2 + c)/(a^3*c^2 -
 a*c*d + (a^3*c*d - a*d^2)*x^2)) - 2*(a^3*c^3 - a*c^2*d + (a^3*c^2*d - a*c*
d^2)*x^2 + (2*(a^4*c^2*d - 2*a^2*c*d^2 + d^3)*x^3 + 3*(a^4*c^3 - 2*a^2*c^2*
d + c*d^2)*x)*arccot(a*x))*sqrt(d*x^2 + c))/(a^4*c^6 - 2*a^2*c^5*d + c^4*d^
2 + (a^4*c^4*d^2 - 2*a^2*c^3*d^3 + c^2*d^4)*x^4 + 2*(a^4*c^5*d - 2*a^2*c^4*
d^2 + c^3*d^3)*x^2)]
```

giac [A] time = 0.16, size = 126, normalized size = 0.94

$$\frac{1}{3}\,a\left(\frac{\left(3\,a^2c-2\,d\right)\arctan\left(\frac{\sqrt{dx^2+c}\,a}{\sqrt{-a^2c+d}}\right)}{\left(a^2c^3-c^2d\right)\sqrt{-a^2c+d}\,a}+\frac{1}{\left(a^2c^2-cd\right)\sqrt{dx^2+c}}\right)+\frac{x\left(\frac{2\,dx^2}{c^2}+\frac{3}{c}\right)\arctan\left(\frac{1}{ax}\right)}{3\left(dx^2+c\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(a*x)/(d*x^2+c)^(5/2),x, algorithm="giac")
```

```
[Out] 1/3*a*((3*a^2*c - 2*d)*arctan(sqrt(d*x^2 + c)*a/sqrt(-a^2*c + d))/((a^2*c^3
 - c^2*d)*sqrt(-a^2*c + d)*a) + 1/((a^2*c^2 - c*d)*sqrt(d*x^2 + c))) + 1/3*
x*(2*d*x^2/c^2 + 3/c)*arctan(1/(a*x))/(d*x^2 + c)^(3/2)
```

maple [F] time = 1.20, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{arccot}\left(ax\right)}{\left(d\,x^2+c\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arccot(a*x)/(d*x^2+c)^(5/2),x)
```

```
[Out] int(arccot(a*x)/(d*x^2+c)^(5/2),x)
```

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

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(a*x)/(d*x^2+c)^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(d-a^2*c>0)', see `assume?` for more
 details)Is d-a^2*c positive or negative?
```

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

$$\int \frac{\operatorname{acot}\left(a\,x\right)}{{\left(d\,x^2+c\right)}^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(acot(a*x)/(c + d*x^2)^(5/2),x)
```

```
[Out] int(acot(a*x)/(c + d*x^2)^(5/2), x)
```

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

$$\int \frac{\operatorname{acot}(ax)}{\left(c+dx^{2}\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(acot(a*x)/(d*x**2+c)**(5/2),x)
```

```
[Out] Integral(acot(a*x)/(c + d*x**2)**(5/2), x)
```

3.63 $\int \frac{\cot^{-1}(ax)}{\left(c+dx^2\right)^{7/2}}\,dx$

Optimal. Leaf size=208

$$\frac{a\left(7a^2c-4d\right)}{15c^2\left(a^2c-d\right)^2\sqrt{c+dx^2}}+\frac{a}{15c\left(a^2c-d\right)\left(c+dx^2\right)^{3/2}}-\frac{\left(15a^4c^2-20a^2cd+8d^2\right)\tanh^{-1}\left(\frac{a\sqrt{c+dx^2}}{\sqrt{a^2c-d}}\right)}{15c^3\left(a^2c-d\right)^{5/2}}+\frac{8x\cot^{-1}(ax)}{15c^3\sqrt{c+dx^2}}$$

```
[Out] 1/15*a/c/(a^2*c-d)/(d*x^2+c)^(3/2)+1/5*x*arccot(a*x)/c/(d*x^2+c)^(5/2)+4/15
*x*arccot(a*x)/c^2/(d*x^2+c)^(3/2)-1/15*(15*a^4*c^2-20*a^2*c*d+8*d^2)*arcta
nh(a*(d*x^2+c)^(1/2)/(a^2*c-d)^(1/2))/c^3/(a^2*c-d)^(5/2)+1/15*a*(7*a^2*c-4
*d)/c^2/(a^2*c-d)^2/(d*x^2+c)^(1/2)+8/15*x*arccot(a*x)/c^3/(d*x^2+c)^(1/2)
```

Rubi [A] time = 0.93, antiderivative size = 208, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 9, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.562, Rules used = {192, 191, 4913, 6688, 12, 6715, 897, 1261, 208}

$$-\frac{\left(15a^4c^2-20a^2cd+8d^2\right)\tanh^{-1}\left(\frac{a\sqrt{c+dx^2}}{\sqrt{a^2c-d}}\right)}{15c^3\left(a^2c-d\right)^{5/2}}+\frac{a\left(7a^2c-4d\right)}{15c^2\left(a^2c-d\right)^2\sqrt{c+dx^2}}+\frac{a}{15c\left(a^2c-d\right)\left(c+dx^2\right)^{3/2}}+\frac{8x\cot^{-1}(ax)}{15c^3\sqrt{c+dx^2}}$$

Antiderivative was successfully verified.

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

```
[Out] a/(15*c*(a^2*c - d)*(c + d*x^2)^(3/2)) + (a*(7*a^2*c - 4*d))/(15*c^2*(a^2*c
 - d)^2*Sqrt[c + d*x^2]) + (x*ArcCot[a*x])/(5*c*(c + d*x^2)^(5/2)) + (4*x*A
rcCot[a*x])/(15*c^2*(c + d*x^2)^(3/2)) + (8*x*ArcCot[a*x])/(15*c^3*Sqrt[c +
 d*x^2]) - ((15*a^4*c^2 - 20*a^2*c*d + 8*d^2)*ArcTanh[(a*Sqrt[c + d*x^2])/S
qrt[a^2*c - d]])/(15*c^3*(a^2*c - d)^(5/2))
```

Rule 12

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

Rule 191

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^(p + 1)
)/a, x] /; FreeQ[{a, b, n, p}, x] && EqQ[1/n + p + 1, 0]
```

Rule 192

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> -Simp[(x*(a + b*x^n)^(p + 1
))/(a*n*(p + 1)), x] + Dist[(n*(p + 1) + 1)/(a*n*(p + 1)), Int[(a + b*x^n)^
(p + 1), x], x] /; FreeQ[{a, b, n, p}, x] && ILtQ[Simplify[1/n + p + 1], 0]
 && NeQ[p, -1]
```

Rule 208

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

Rule 897

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))^(n_)*((a_.) + (b_.)*(x_)
 + (c_.)*(x_)^2)^(p_.), x_Symbol] :> With[{q = Denominator[m]}, Dist[q/e, S
ubst[Int[x^(q*(m + 1) - 1)*((e*f - d*g)/e + (g*x^q)/e)^n*((c*d^2 - b*d*e +
```

```
a*e^2)/e^2 - ((2*c*d - b*e)*x^q)/e^2 + (c*x^(2*q))/e^2)^p, x], x, (d + e*x)
^(1/q)], x]] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[e*f - d*g, 0] && NeQ
[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && IntegersQ[n, p] && Fra
ctionQ[m]
```

Rule 1261

```
Int[((f_.)*(x_))^(m_.)*((d_) + (e_.)*(x_)^2)^(q_.)*((a_) + (b_.)*(x_)^2 + (
c_.)*(x_)^4)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(f*x)^m*(d + e*x^2)^q*
(a + b*x^2 + c*x^4)^p, x], x] /; FreeQ[{a, b, c, d, e, f, m, q}, x] && NeQ[
b^2 - 4*a*c, 0] && IGtQ[p, 0] && IGtQ[q, -2]
```

Rule 4913

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))*((d_.) + (e_.)*(x_)^2)^(q_.), x_Symb
ol] :> With[{u = IntHide[(d + e*x^2)^q, x]}, Dist[a + b*ArcCot[c*x], u, x]
+ Dist[b*c, Int[u/(1 + c^2*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && (I
ntegerQ[q] || ILtQ[q + 1/2, 0])
```

Rule 6688

```
Int[u_, x_Symbol] :> With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; Simpl
erIntegrandQ[v, u, x]]
```

Rule 6715

```
Int[(u_)*(x_)^(m_.), x_Symbol] :> Dist[1/(m + 1), Subst[Int[SubstFor[x^(m +
 1), u, x], x], x, x^(m + 1)], x] /; FreeQ[m, x] && NeQ[m, -1] && FunctionO
fQ[x^(m + 1), u, x]
```

Rubi steps

$$\int \frac{\cot^{-1}(ax)}{\left(c+dx^2\right)^{7/2}}\,dx = \frac{x\cot^{-1}(ax)}{5c\left(c+dx^2\right)^{5/2}} + \frac{4x\cot^{-1}(ax)}{15c^2\left(c+dx^2\right)^{3/2}} + \frac{8x\cot^{-1}(ax)}{15c^3\sqrt{c+dx^2}} + a\int \frac{\frac{x}{5c\left(c+dx^2\right)^{5/2}} + \frac{4x}{15c^2\left(c+dx^2\right)^{3/2}} + \frac{8}{15c^3 \sqrt{}}}{1+a^2x^2}$$

$$= \frac{x\cot^{-1}(ax)}{5c\left(c+dx^2\right)^{5/2}} + \frac{4x\cot^{-1}(ax)}{15c^2\left(c+dx^2\right)^{3/2}} + \frac{8x\cot^{-1}(ax)}{15c^3\sqrt{c+dx^2}} + a\int \frac{x\left(15c^2+20cdx^2+8d^2x^4\right)}{15c^3\left(1+a^2x^2\right)\left(c+dx^2\right)^{5/2}}\,dx$$

$$= \frac{x\cot^{-1}(ax)}{5c\left(c+dx^2\right)^{5/2}} + \frac{4x\cot^{-1}(ax)}{15c^2\left(c+dx^2\right)^{3/2}} + \frac{8x\cot^{-1}(ax)}{15c^3\sqrt{c+dx^2}} + \frac{a\int \frac{x\left(15c^2+20cdx^2+8d^2x^4\right)}{\left(1+a^2x^2\right)\left(c+dx^2\right)^{5/2}}\,dx}{15c^3}$$

$$= \frac{x\cot^{-1}(ax)}{5c\left(c+dx^2\right)^{5/2}} + \frac{4x\cot^{-1}(ax)}{15c^2\left(c+dx^2\right)^{3/2}} + \frac{8x\cot^{-1}(ax)}{15c^3\sqrt{c+dx^2}} + \frac{a\,\mathrm{Subst}\left(\int \frac{15c^2+20cdx+8d^2x^2}{\left(1+a^2x\right)(c+dx)^{5/2}}\,dx, x, x^2\right)}{30c^3}$$

$$= \frac{x\cot^{-1}(ax)}{5c\left(c+dx^2\right)^{5/2}} + \frac{4x\cot^{-1}(ax)}{15c^2\left(c+dx^2\right)^{3/2}} + \frac{8x\cot^{-1}(ax)}{15c^3\sqrt{c+dx^2}} + \frac{a\,\mathrm{Subst}\left(\int \frac{3c^2+4cx^2+8x^4}{x^4\left(\frac{-a^2c+d}{d}+\frac{a^2x^2}{d}\right)}\,dx, x, \sqrt{c+}\right.}{15c^3d}$$

$$= \frac{x\cot^{-1}(ax)}{5c\left(c+dx^2\right)^{5/2}} + \frac{4x\cot^{-1}(ax)}{15c^2\left(c+dx^2\right)^{3/2}} + \frac{8x\cot^{-1}(ax)}{15c^3\sqrt{c+dx^2}} + \frac{a\,\mathrm{Subst}\left(\int \left(\frac{3c^2d}{\left(-a^2c+d\right)x^4} - \frac{c\left(7a^2c-4d\right)d}{\left(-a^2c+d\right)^2x^2} + \right.\right.}{15}$$

$$= \frac{a}{15c\left(a^2c-d\right)\left(c+dx^2\right)^{3/2}} + \frac{a\left(7a^2c-4d\right)}{15c^2\left(a^2c-d\right)^2\sqrt{c+dx^2}} + \frac{x\cot^{-1}(ax)}{5c\left(c+dx^2\right)^{5/2}} + \frac{4x\cot^{-1}(ax)}{15c^2\left(c+dx^2\right)^{3/2}}$$

$$= \frac{a}{15c\left(a^2c-d\right)\left(c+dx^2\right)^{3/2}} + \frac{a\left(7a^2c-4d\right)}{15c^2\left(a^2c-d\right)^2\sqrt{c+dx^2}} + \frac{x\cot^{-1}(ax)}{5c\left(c+dx^2\right)^{5/2}} + \frac{4x\cot^{-1}(ax)}{15c^2\left(c+dx^2\right)^{3/2}}$$

Mathematica [C] time = 1.14, size = 345, normalized size = 1.66

$$-\frac{-\frac{2ac\left(a^2c\left(8c+7dx^2\right)-d\left(5c+4dx^2\right)\right)}{\left(d-a^2c\right)^2\left(c+dx^2\right)^{3/2}} + \frac{\left(15a^4c^2-20a^2cd+8d^2\right)\log\left(\frac{60ac^3\left(a^2c-d\right)^{3/2}\left(\sqrt{a^2c-d}\sqrt{c+dx^2}+ac-idx\right)}{(ax+i)\left(15a^4c^2-20a^2cd+8d^2\right)}\right)}{\left(a^2c-d\right)^{5/2}} + \frac{\left(15a^4c^2-20a^2cd+8d^2\right)\log\left(\frac{60ac^3\left(a^2c-d\right)}{(ax-i)}\right.}{\left(a^2c-d\right)^{5/2}}}{30c^3}$$

Antiderivative was successfully verified.

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

```
[Out] -1/30*((-2*a*c*(-(d*(5*c + 4*d*x^2)) + a^2*c*(8*c + 7*d*x^2)))/((-(a^2*c) +
 d)^2*(c + d*x^2)^(3/2)) - (2*x*(15*c^2 + 20*c*d*x^2 + 8*d^2*x^4)*ArcCot[a*
x])/(c + d*x^2)^(5/2) + ((15*a^4*c^2 - 20*a^2*c*d + 8*d^2)*Log[(60*a*c^3*(a
^2*c - d)^(3/2)*(a*c - I*d*x + Sqrt[a^2*c - d]*Sqrt[c + d*x^2]))/((15*a^4*c
^2 - 20*a^2*c*d + 8*d^2)*(I + a*x))])/(a^2*c - d)^(5/2) + ((15*a^4*c^2 - 20
*a^2*c*d + 8*d^2)*Log[(60*a*c^3*(a^2*c - d)^(3/2)*(a*c + I*d*x + Sqrt[a^2*c
 - d]*Sqrt[c + d*x^2]))/((15*a^4*c^2 - 20*a^2*c*d + 8*d^2)*(-I + a*x))])/(a
^2*c - d)^(5/2))/c^3
```

fricas [B] time = 1.41, size = 1278, normalized size = 6.14

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(a*x)/(d*x^2+c)^(7/2),x, algorithm="fricas")
```

```
[Out] [1/60*((15*a^4*c^5 - 20*a^2*c^4*d + (15*a^4*c^2*d^3 - 20*a^2*c*d^4 + 8*d^5)
*x^6 + 8*c^3*d^2 + 3*(15*a^4*c^3*d^2 - 20*a^2*c^2*d^3 + 8*c*d^4)*x^4 + 3*(1
5*a^4*c^4*d - 20*a^2*c^3*d^2 + 8*c^2*d^3)*x^2)*sqrt(a^2*c - d)*log((a^4*d^2
*x^4 + 8*a^4*c^2 - 8*a^2*c*d + 2*(4*a^4*c*d - 3*a^2*d^2)*x^2 - 4*(a^3*d*x^2
 + 2*a^3*c - a*d)*sqrt(a^2*c - d)*sqrt(d*x^2 + c) + d^2)/(a^4*x^4 + 2*a^2*x
^2 + 1)) + 4*(8*a^5*c^5 - 13*a^3*c^4*d + 5*a*c^3*d^2 + (7*a^5*c^3*d^2 - 11*
a^3*c^2*d^3 + 4*a*c*d^4)*x^4 + 3*(5*a^5*c^4*d - 8*a^3*c^3*d^2 + 3*a*c^2*d^3
)*x^2 + (8*(a^6*c^3*d^2 - 3*a^4*c^2*d^3 + 3*a^2*c*d^4 - d^5)*x^5 + 20*(a^6*
c^4*d - 3*a^4*c^3*d^2 + 3*a^2*c^2*d^3 - c*d^4)*x^3 + 15*(a^6*c^5 - 3*a^4*c^
4*d + 3*a^2*c^3*d^2 - c^2*d^3)*x)*arccot(a*x))*sqrt(d*x^2 + c))/(a^6*c^9 -
3*a^4*c^8*d + 3*a^2*c^7*d^2 - c^6*d^3 + (a^6*c^6*d^3 - 3*a^4*c^5*d^4 + 3*a^
2*c^4*d^5 - c^3*d^6)*x^6 + 3*(a^6*c^7*d^2 - 3*a^4*c^6*d^3 + 3*a^2*c^5*d^4 -
 c^4*d^5)*x^4 + 3*(a^6*c^8*d - 3*a^4*c^7*d^2 + 3*a^2*c^6*d^3 - c^5*d^4)*x^2
), -1/30*((15*a^4*c^5 - 20*a^2*c^4*d + (15*a^4*c^2*d^3 - 20*a^2*c*d^4 + 8*d
^5)*x^6 + 8*c^3*d^2 + 3*(15*a^4*c^3*d^2 - 20*a^2*c^2*d^3 + 8*c*d^4)*x^4 + 3
*(15*a^4*c^4*d - 20*a^2*c^3*d^2 + 8*c^2*d^3)*x^2)*sqrt(-a^2*c + d)*arctan(-
1/2*(a^2*d*x^2 + 2*a^2*c - d)*sqrt(-a^2*c + d)*sqrt(d*x^2 + c)/(a^3*c^2 - a
*c*d + (a^3*c*d - a*d^2)*x^2)) - 2*(8*a^5*c^5 - 13*a^3*c^4*d + 5*a*c^3*d^2
+ (7*a^5*c^3*d^2 - 11*a^3*c^2*d^3 + 4*a*c*d^4)*x^4 + 3*(5*a^5*c^4*d - 8*a^3
*c^3*d^2 + 3*a*c^2*d^3)*x^2 + (8*(a^6*c^3*d^2 - 3*a^4*c^2*d^3 + 3*a^2*c*d^4
 - d^5)*x^5 + 20*(a^6*c^4*d - 3*a^4*c^3*d^2 + 3*a^2*c^2*d^3 - c*d^4)*x^3 +
15*(a^6*c^5 - 3*a^4*c^4*d + 3*a^2*c^3*d^2 - c^2*d^3)*x)*arccot(a*x))*sqrt(d
*x^2 + c))/(a^6*c^9 - 3*a^4*c^8*d + 3*a^2*c^7*d^2 - c^6*d^3 + (a^6*c^6*d^3
- 3*a^4*c^5*d^4 + 3*a^2*c^4*d^5 - c^3*d^6)*x^6 + 3*(a^6*c^7*d^2 - 3*a^4*c^6
*d^3 + 3*a^2*c^5*d^4 - c^4*d^5)*x^4 + 3*(a^6*c^8*d - 3*a^4*c^7*d^2 + 3*a^2*
c^6*d^3 - c^5*d^4)*x^2)]
```

giac [A] time = 0.17, size = 208, normalized size = 1.00

$$\frac{1}{15}a\left(\frac{\left(15a^4c^2-20a^2cd+8d^2\right)\arctan\left(\frac{\sqrt{dx^2+c}\,a}{\sqrt{-a^2c+d}}\right)}{\left(a^4c^5-2a^2c^4d+c^3d^2\right)\sqrt{-a^2c+d}\,a}+\frac{7\left(dx^2+c\right)a^2c+a^2c^2-4\left(dx^2+c\right)d-cd}{\left(a^4c^4-2a^2c^3d+c^2d^2\right)\left(dx^2+c\right)^{\frac{3}{2}}}\right)+\frac{\left(4x^2\left(\frac{2d^2x^2}{c^3}+\right.\right.}{1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(a*x)/(d*x^2+c)^(7/2),x, algorithm="giac")
```

```
[Out] 1/15*a*((15*a^4*c^2 - 20*a^2*c*d + 8*d^2)*arctan(sqrt(d*x^2 + c)*a/sqrt(-a^
2*c + d))/((a^4*c^5 - 2*a^2*c^4*d + c^3*d^2)*sqrt(-a^2*c + d)*a) + (7*(d*x^
2 + c)*a^2*c + a^2*c^2 - 4*(d*x^2 + c)*d - c*d)/((a^4*c^4 - 2*a^2*c^3*d + c
^2*d^2)*(d*x^2 + c)^(3/2))) + 1/15*(4*x^2*(2*d^2*x^2/c^3 + 5*d/c^2) + 15/c)
*x*arctan(1/(a*x))/(d*x^2 + c)^(5/2)
```

maple [F] time = 1.18, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{arccot}\left(ax\right)}{\left(d\,x^2+c\right)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arccot(a*x)/(d*x^2+c)^(7/2),x)
```

```
[Out] int(arccot(a*x)/(d*x^2+c)^(7/2),x)
```

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

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(a*x)/(d*x^2+c)^(7/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(d-a^2*c>0)', see `assume?` for more
 details)Is d-a^2*c positive or negative?
```

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

$$\int \frac{\operatorname{acot}(a\,x)}{{\left(d\,x^2+c\right)}^{7/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(acot(a*x)/(c + d*x^2)^(7/2),x)
```

```
[Out] int(acot(a*x)/(c + d*x^2)^(7/2), x)
```

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

$$\int \frac{\operatorname{acot}(ax)}{\left(c+dx^2\right)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(acot(a*x)/(d*x**2+c)**(7/2),x)
```

```
[Out] Integral(acot(a*x)/(c + d*x**2)**(7/2), x)
```

3.64 $\int \frac{\cot^{-1}(ax)}{(c+dx^2)^{9/2}}\,dx$

Optimal. Leaf size=293

$$\frac{a\left(11a^2c-6d\right)}{105c^2\left(a^2c-d\right)^2\left(c+dx^2\right)^{3/2}}+\frac{a}{35c\left(a^2c-d\right)\left(c+dx^2\right)^{5/2}}+\frac{a\left(19a^4c^2-22a^2cd+8d^2\right)}{35c^3\left(a^2c-d\right)^3\sqrt{c+dx^2}}-\frac{\left(35a^6c^3-70a^4c^2d+56\ldots\right.}{35c^4\ldots}$$

```
[Out] 1/35*a/c/(a^2*c-d)/(d*x^2+c)^(5/2)+1/105*a*(11*a^2*c-6*d)/c^2/(a^2*c-d)^2/(
d*x^2+c)^(3/2)+1/7*x*arccot(a*x)/c/(d*x^2+c)^(7/2)+6/35*x*arccot(a*x)/c^2/(
d*x^2+c)^(5/2)+8/35*x*arccot(a*x)/c^3/(d*x^2+c)^(3/2)-1/35*(35*a^6*c^3-70*a
^4*c^2*d+56*a^2*c*d^2-16*d^3)*arctanh(a*(d*x^2+c)^(1/2)/(a^2*c-d)^(1/2))/c^
4/(a^2*c-d)^(7/2)+1/35*a*(19*a^4*c^2-22*a^2*c*d+8*d^2)/c^3/(a^2*c-d)^3/(d*x
^2+c)^(1/2)+16/35*x*arccot(a*x)/c^4/(d*x^2+c)^(1/2)
```

Rubi [A] time = 1.16, antiderivative size = 293, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 9, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.562, Rules used = {192, 191, 4913, 6688, 12, 6715, 1619, 63, 208}

$$\frac{a\left(19a^4c^2-22a^2cd+8d^2\right)}{35c^3\left(a^2c-d\right)^3\sqrt{c+dx^2}}-\frac{\left(-70a^4c^2d+35a^6c^3+56a^2cd^2-16d^3\right)\tanh^{-1}\left(\frac{a\sqrt{c+dx^2}}{\sqrt{a^2c-d}}\right)}{35c^4\left(a^2c-d\right)^{7/2}}+\frac{a\left(11a^2c-6d\right)}{105c^2\left(a^2c-d\right)^2\left(c+d\ldots\right.}$$

Antiderivative was successfully verified.

```
[In] Int[ArcCot[a*x]/(c + d*x^2)^(9/2),x]
```

```
[Out] a/(35*c*(a^2*c - d)*(c + d*x^2)^(5/2)) + (a*(11*a^2*c - 6*d))/(105*c^2*(a^2
*c - d)^2*(c + d*x^2)^(3/2)) + (a*(19*a^4*c^2 - 22*a^2*c*d + 8*d^2))/(35*c^
3*(a^2*c - d)^3*Sqrt[c + d*x^2]) + (x*ArcCot[a*x])/(7*c*(c + d*x^2)^(7/2))
+ (6*x*ArcCot[a*x])/(35*c^2*(c + d*x^2)^(5/2)) + (8*x*ArcCot[a*x])/(35*c^3*
(c + d*x^2)^(3/2)) + (16*x*ArcCot[a*x])/(35*c^4*Sqrt[c + d*x^2]) - ((35*a^6
*c^3 - 70*a^4*c^2*d + 56*a^2*c*d^2 - 16*d^3)*ArcTanh[(a*Sqrt[c + d*x^2])/Sq
rt[a^2*c - d]])/(35*c^4*(a^2*c - d)^(7/2))
```

Rule 12

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

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 191

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^(p + 1)
)/a, x] /; FreeQ[{a, b, n, p}, x] && EqQ[1/n + p + 1, 0]
```

Rule 192

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> -Simp[(x*(a + b*x^n)^(p + 1
))/(a*n*(p + 1)), x] + Dist[(n*(p + 1) + 1)/(a*n*(p + 1)), Int[(a + b*x^n)^
(p + 1), x], x] /; FreeQ[{a, b, n, p}, x] && ILtQ[Simplify[1/n + p + 1], 0]
```

```
&& NeQ[p, -1]
```

Rule 208

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

Rule 1619

```
Int[((Px_)*((c_.) + (d_.)*(x_))^(n_.))/((a_.) + (b_.)*(x_)), x_Symbol] :> I
nt[ExpandIntegrand[1/Sqrt[c + d*x], (Px*(c + d*x)^(n + 1/2))/(a + b*x), x],
 x] /; FreeQ[{a, b, c, d, n}, x] && PolyQ[Px, x] && ILtQ[n + 1/2, 0] && GtQ
[Expon[Px, x], 2]
```

Rule 4913

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))*((d_.) + (e_.)*(x_)^2)^(q_.), x_Symb
ol] :> With[{u = IntHide[(d + e*x^2)^q, x]}, Dist[a + b*ArcCot[c*x], u, x]
+ Dist[b*c, Int[u/(1 + c^2*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && (I
ntegerQ[q] || ILtQ[q + 1/2, 0])
```

Rule 6688

```
Int[u_, x_Symbol] :> With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; Simpl
erIntegrandQ[v, u, x]]
```

Rule 6715

```
Int[(u_)*(x_)^(m_.), x_Symbol] :> Dist[1/(m + 1), Subst[Int[SubstFor[x^(m +
 1), u, x], x], x, x^(m + 1)], x] /; FreeQ[m, x] && NeQ[m, -1] && FunctionO
fQ[x^(m + 1), u, x]
```

Rubi steps

$$\int \frac{\cot^{-1}(ax)}{\left(c+dx^2\right)^{9/2}}\,dx = \frac{x\cot^{-1}(ax)}{7c\left(c+dx^2\right)^{7/2}} + \frac{6x\cot^{-1}(ax)}{35c^2\left(c+dx^2\right)^{5/2}} + \frac{8x\cot^{-1}(ax)}{35c^3\left(c+dx^2\right)^{3/2}} + \frac{16x\cot^{-1}(ax)}{35c^4\sqrt{c+dx^2}} + a\int \frac{\frac{x}{7c\left(c+dx^2\right)^{7/}}}{\cdots}$$

$$= \frac{x\cot^{-1}(ax)}{7c\left(c+dx^2\right)^{7/2}} + \frac{6x\cot^{-1}(ax)}{35c^2\left(c+dx^2\right)^{5/2}} + \frac{8x\cot^{-1}(ax)}{35c^3\left(c+dx^2\right)^{3/2}} + \frac{16x\cot^{-1}(ax)}{35c^4\sqrt{c+dx^2}} + a\int \frac{x\left(35c^3+\cdots\right.}{35c\cdots}$$

$$= \frac{x\cot^{-1}(ax)}{7c\left(c+dx^2\right)^{7/2}} + \frac{6x\cot^{-1}(ax)}{35c^2\left(c+dx^2\right)^{5/2}} + \frac{8x\cot^{-1}(ax)}{35c^3\left(c+dx^2\right)^{3/2}} + \frac{16x\cot^{-1}(ax)}{35c^4\sqrt{c+dx^2}} + \frac{a\int \frac{x\left(35c^3+70c^2\cdots\right.}{\left(1+a\cdots\right.}}{\cdots}$$

$$= \frac{x\cot^{-1}(ax)}{7c\left(c+dx^2\right)^{7/2}} + \frac{6x\cot^{-1}(ax)}{35c^2\left(c+dx^2\right)^{5/2}} + \frac{8x\cot^{-1}(ax)}{35c^3\left(c+dx^2\right)^{3/2}} + \frac{16x\cot^{-1}(ax)}{35c^4\sqrt{c+dx^2}} + \frac{a\,\text{Subst}\left(\int \frac{35\cdots}{\cdots}\right.}{\cdots}$$

$$= \frac{x\cot^{-1}(ax)}{7c\left(c+dx^2\right)^{7/2}} + \frac{6x\cot^{-1}(ax)}{35c^2\left(c+dx^2\right)^{5/2}} + \frac{8x\cot^{-1}(ax)}{35c^3\left(c+dx^2\right)^{3/2}} + \frac{16x\cot^{-1}(ax)}{35c^4\sqrt{c+dx^2}} + \frac{a\,\text{Subst}\left(\int\left(-\cdots\right.\right.}{\cdots}$$

$$= \frac{a}{35c\left(a^2c-d\right)\left(c+dx^2\right)^{5/2}} + \frac{a\left(11a^2c-6d\right)}{105c^2\left(a^2c-d\right)^2\left(c+dx^2\right)^{3/2}} + \frac{a\left(19a^4c^2-22a^2cd+8d^2\right)}{35c^3\left(a^2c-d\right)^3\sqrt{c+dx^2}} + \cdots$$

$$= \frac{a}{35c\left(a^2c-d\right)\left(c+dx^2\right)^{5/2}} + \frac{a\left(11a^2c-6d\right)}{105c^2\left(a^2c-d\right)^2\left(c+dx^2\right)^{3/2}} + \frac{a\left(19a^4c^2-22a^2cd+8d^2\right)}{35c^3\left(a^2c-d\right)^3\sqrt{c+dx^2}} + \cdots$$

$$= \frac{a}{35c\left(a^2c-d\right)\left(c+dx^2\right)^{5/2}} + \frac{a\left(11a^2c-6d\right)}{105c^2\left(a^2c-d\right)^2\left(c+dx^2\right)^{3/2}} + \frac{a\left(19a^4c^2-22a^2cd+8d^2\right)}{35c^3\left(a^2c-d\right)^3\sqrt{c+dx^2}} + \cdots$$

Mathematica [C] time = 1.67, size = 450, normalized size = 1.54

$$\frac{\frac{2ac\left(3c^2\left(d-a^2c\right)^2+c\left(11a^2c-6d\right)\left(a^2c-d\right)\left(c+dx^2\right)+3\left(19a^4c^2-22a^2cd+8d^2\right)\left(c+dx^2\right)^2\right)}{\left(a^2c-d\right)^3\left(c+dx^2\right)^{5/2}} - \frac{3\left(35a^6c^3-70a^4c^2d+56a^2cd^2-16d^3\right)\log\left(\frac{140ac^4\left(a^2c-d\right)^{5/2}\left(\sqrt{a^2\cdots}\right.}{(ax+i)\left(35a^6c^3-70a^4\cdots\right.}\right.}{\left(a^2c-d\right)^{7/2}}\cdots}{\cdots}$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcCot[a*x]/(c + d*x^2)^(9/2),x]
```

```
[Out] ((2*a*c*(3*c^2*(-(a^2*c) + d)^2 + c*(11*a^2*c - 6*d)*(a^2*c - d)*(c + d*x^2
) + 3*(19*a^4*c^2 - 22*a^2*c*d + 8*d^2)*(c + d*x^2)^2))/((a^2*c - d)^3*(c +
 d*x^2)^(5/2)) + (6*x*(35*c^3 + 70*c^2*d*x^2 + 56*c*d^2*x^4 + 16*d^3*x^6)*A
rcCot[a*x])/(c + d*x^2)^(7/2) - (3*(35*a^6*c^3 - 70*a^4*c^2*d + 56*a^2*c*d^
2 - 16*d^3)*Log[(140*a*c^4*(a^2*c - d)^(5/2)*(a*c - I*d*x + Sqrt[a^2*c - d]
*Sqrt[c + d*x^2]))/((35*a^6*c^3 - 70*a^4*c^2*d + 56*a^2*c*d^2 - 16*d^3)*(I
+ a*x))])/(a^2*c - d)^(7/2) - (3*(35*a^6*c^3 - 70*a^4*c^2*d + 56*a^2*c*d^2
- 16*d^3)*Log[(140*a*c^4*(a^2*c - d)^(5/2)*(a*c + I*d*x + Sqrt[a^2*c - d]*S
qrt[c + d*x^2]))/((35*a^6*c^3 - 70*a^4*c^2*d + 56*a^2*c*d^2 - 16*d^3)*(-I +
 a*x))])/(a^2*c - d)^(7/2))/(210*c^4)
```

fricas [B] time = 1.59, size = 1986, normalized size = 6.78

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(a*x)/(d*x^2+c)^(9/2),x, algorithm="fricas")
```

```
[Out] [1/420*(3*(35*a^6*c^7 - 70*a^4*c^6*d + 56*a^2*c^5*d^2 + (35*a^6*c^3*d^4 - 7
0*a^4*c^2*d^5 + 56*a^2*c*d^6 - 16*d^7)*x^8 - 16*c^4*d^3 + 4*(35*a^6*c^4*d^3
 - 70*a^4*c^3*d^4 + 56*a^2*c^2*d^5 - 16*c*d^6)*x^6 + 6*(35*a^6*c^5*d^2 - 70
*a^4*c^4*d^3 + 56*a^2*c^3*d^4 - 16*c^2*d^5)*x^4 + 4*(35*a^6*c^6*d - 70*a^4*
c^5*d^2 + 56*a^2*c^4*d^3 - 16*c^3*d^4)*x^2)*sqrt(a^2*c - d)*log((a^4*d^2*x^
4 + 8*a^4*c^2 - 8*a^2*c*d + 2*(4*a^4*c*d - 3*a^2*d^2)*x^2 - 4*(a^3*d*x^2 +
2*a^3*c - a*d)*sqrt(a^2*c - d)*sqrt(d*x^2 + c) + d^2)/(a^4*x^4 + 2*a^2*x^2
+ 1)) + 4*(71*a^7*c^7 - 160*a^5*c^6*d + 122*a^3*c^5*d^2 - 33*a*c^4*d^3 + 3*
(19*a^7*c^4*d^3 - 41*a^5*c^3*d^4 + 30*a^3*c^2*d^5 - 8*a*c*d^6)*x^6 + (182*a
^7*c^5*d^2 - 397*a^5*c^4*d^3 + 293*a^3*c^3*d^4 - 78*a*c^2*d^5)*x^4 + (196*a
^7*c^6*d - 434*a^5*c^5*d^2 + 325*a^3*c^4*d^3 - 87*a*c^3*d^4)*x^2 + 3*(16*(a
^8*c^4*d^3 - 4*a^6*c^3*d^4 + 6*a^4*c^2*d^5 - 4*a^2*c*d^6 + d^7)*x^7 + 56*(a
^8*c^5*d^2 - 4*a^6*c^4*d^3 + 6*a^4*c^3*d^4 - 4*a^2*c^2*d^5 + c*d^6)*x^5 + 7
0*(a^8*c^6*d - 4*a^6*c^5*d^2 + 6*a^4*c^4*d^3 - 4*a^2*c^3*d^4 + c^2*d^5)*x^3
 + 35*(a^8*c^7 - 4*a^6*c^6*d + 6*a^4*c^5*d^2 - 4*a^2*c^4*d^3 + c^3*d^4)*x)*
arccot(a*x))*sqrt(d*x^2 + c))/(a^8*c^12 - 4*a^6*c^11*d + 6*a^4*c^10*d^2 - 4
*a^2*c^9*d^3 + c^8*d^4 + (a^8*c^8*d^4 - 4*a^6*c^7*d^5 + 6*a^4*c^6*d^6 - 4*a
^2*c^5*d^7 + c^4*d^8)*x^8 + 4*(a^8*c^9*d^3 - 4*a^6*c^8*d^4 + 6*a^4*c^7*d^5
 - 4*a^2*c^6*d^6 + c^5*d^7)*x^6 + 6*(a^8*c^10*d^2 - 4*a^6*c^9*d^3 + 6*a^4*c^
8*d^4 - 4*a^2*c^7*d^5 + c^6*d^6)*x^4 + 4*(a^8*c^11*d - 4*a^6*c^10*d^2 + 6*a
^4*c^9*d^3 - 4*a^2*c^8*d^4 + c^7*d^5)*x^2), -1/210*(3*(35*a^6*c^7 - 70*a^4*
c^6*d + 56*a^2*c^5*d^2 + (35*a^6*c^3*d^4 - 70*a^4*c^2*d^5 + 56*a^2*c*d^6 -
16*d^7)*x^8 - 16*c^4*d^3 + 4*(35*a^6*c^4*d^3 - 70*a^4*c^3*d^4 + 56*a^2*c^2*
d^5 - 16*c*d^6)*x^6 + 6*(35*a^6*c^5*d^2 - 70*a^4*c^4*d^3 + 56*a^2*c^3*d^4 -
 16*c^2*d^5)*x^4 + 4*(35*a^6*c^6*d - 70*a^4*c^5*d^2 + 56*a^2*c^4*d^3 - 16*c
^3*d^4)*x^2)*sqrt(-a^2*c + d)*arctan(-1/2*(a^2*d*x^2 + 2*a^2*c - d)*sqrt(-a
^2*c + d)*sqrt(d*x^2 + c)/(a^3*c^2 - a*c*d + (a^3*c*d - a*d^2)*x^2)) - 2*(7
1*a^7*c^7 - 160*a^5*c^6*d + 122*a^3*c^5*d^2 - 33*a*c^4*d^3 + 3*(19*a^7*c^4*
d^3 - 41*a^5*c^3*d^4 + 30*a^3*c^2*d^5 - 8*a*c*d^6)*x^6 + (182*a^7*c^5*d^2 -
 397*a^5*c^4*d^3 + 293*a^3*c^3*d^4 - 78*a*c^2*d^5)*x^4 + (196*a^7*c^6*d - 4
34*a^5*c^5*d^2 + 325*a^3*c^4*d^3 - 87*a*c^3*d^4)*x^2 + 3*(16*(a^8*c^4*d^3 -
 4*a^6*c^3*d^4 + 6*a^4*c^2*d^5 - 4*a^2*c*d^6 + d^7)*x^7 + 56*(a^8*c^5*d^2 -
 4*a^6*c^4*d^3 + 6*a^4*c^3*d^4 - 4*a^2*c^2*d^5 + c*d^6)*x^5 + 70*(a^8*c^6*d
 - 4*a^6*c^5*d^2 + 6*a^4*c^4*d^3 - 4*a^2*c^3*d^4 + c^2*d^5)*x^3 + 35*(a^8*c
^7 - 4*a^6*c^6*d + 6*a^4*c^5*d^2 - 4*a^2*c^4*d^3 + c^3*d^4)*x)*arccot(a*x))
*sqrt(d*x^2 + c))/(a^8*c^12 - 4*a^6*c^11*d + 6*a^4*c^10*d^2 - 4*a^2*c^9*d^3
 + c^8*d^4 + (a^8*c^8*d^4 - 4*a^6*c^7*d^5 + 6*a^4*c^6*d^6 - 4*a^2*c^5*d^7 +
 c^4*d^8)*x^8 + 4*(a^8*c^9*d^3 - 4*a^6*c^8*d^4 + 6*a^4*c^7*d^5 - 4*a^2*c^6*
d^6 + c^5*d^7)*x^6 + 6*(a^8*c^10*d^2 - 4*a^6*c^9*d^3 + 6*a^4*c^8*d^4 - 4*a^
2*c^7*d^5 + c^6*d^6)*x^4 + 4*(a^8*c^11*d - 4*a^6*c^10*d^2 + 6*a^4*c^9*d^3 -
 4*a^2*c^8*d^4 + c^7*d^5)*x^2)]
```

giac [A] time = 0.18, size = 340, normalized size = 1.16

$$\frac{1}{105}a\left(\frac{3\left(35\,a^6c^3-70\,a^4c^2d+56\,a^2cd^2-16\,d^3\right)\arctan\left(\frac{\sqrt{dx^2+c}\,a}{\sqrt{-a^2c+d}}\right)}{\left(a^6c^7-3\,a^4c^6d+3\,a^2c^5d^2-c^4d^3\right)\sqrt{-a^2c+d}\,a}+\frac{57\left(dx^2+c\right)^2a^4c^2+11\left(dx^2+c\right)a^4c^3+3\,a^4c}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(a*x)/(d*x^2+c)^(9/2),x, algorithm="giac")
```

```
[Out] 1/105*a*(3*(35*a^6*c^3 - 70*a^4*c^2*d + 56*a^2*c*d^2 - 16*d^3)*arctan(sqrt(
d*x^2 + c)*a/sqrt(-a^2*c + d))/((a^6*c^7 - 3*a^4*c^6*d + 3*a^2*c^5*d^2 - c^
4*d^3)*sqrt(-a^2*c + d)*a) + (57*(d*x^2 + c)^2*a^4*c^2 + 11*(d*x^2 + c)*a^4
*c^3 + 3*a^4*c^4 - 66*(d*x^2 + c)^2*a^2*c*d - 17*(d*x^2 + c)*a^2*c^2*d - 6*
```

```
a^2*c^3*d + 24*(d*x^2 + c)^2*d^2 + 6*(d*x^2 + c)*c*d^2 + 3*c^2*d^2)/((a^6*c
^6 - 3*a^4*c^5*d + 3*a^2*c^4*d^2 - c^3*d^3)*(d*x^2 + c)^(5/2))) + 1/35*(2*(
4*x^2*(2*d^3*x^2/c^4 + 7*d^2/c^3) + 35*d/c^2)*x^2 + 35/c)*x*arctan(1/(a*x))
/(d*x^2 + c)^(7/2)
```

maple [**F**] time = 1.20, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{arccot}(ax)}{\left(d\,x^2+c\right)^{\frac{9}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arccot(a*x)/(d*x^2+c)^(9/2),x)
[Out] int(arccot(a*x)/(d*x^2+c)^(9/2),x)
```

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

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(a*x)/(d*x^2+c)^(9/2),x, algorithm="maxima")
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(d-a^2*c>0)', see `assume?` for more
 details)Is d-a^2*c positive or negative?
```

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

$$\int \frac{\operatorname{acot}(a\,x)}{\left(d\,x^2+c\right)^{9/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(acot(a*x)/(c + d*x^2)^(9/2),x)
[Out] int(acot(a*x)/(c + d*x^2)^(9/2), x)
```

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

$$\int \frac{\operatorname{acot}(ax)}{\left(c+dx^2\right)^{\frac{9}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(acot(a*x)/(d*x**2+c)**(9/2),x)
[Out] Integral(acot(a*x)/(c + d*x**2)**(9/2), x)
```

3.65 $\int \sqrt{a+ax^2}\cot^{-1}(x)\,dx$

Optimal. Leaf size=195

$$-\frac{ia\sqrt{x^2+1}\,\text{Li}_2\left(-\frac{i\sqrt{ix+1}}{\sqrt{1-ix}}\right)}{2\sqrt{ax^2+a}}+\frac{ia\sqrt{x^2+1}\,\text{Li}_2\left(\frac{i\sqrt{ix+1}}{\sqrt{1-ix}}\right)}{2\sqrt{ax^2+a}}+\frac{1}{2}\sqrt{ax^2+a}+\frac{1}{2}x\sqrt{ax^2+a}\,\cot^{-1}(x)-\frac{ia\sqrt{x^2+1}\,\tan^{-1}\left(\frac{\sqrt{1+ix}}{\sqrt{1-ix}}\right.}{\sqrt{ax^2+a}}$$

```
[Out] -I*a*arccot(x)*arctan((1+I*x)^(1/2)/(1-I*x)^(1/2))*(x^2+1)^(1/2)/(a*x^2+a)^
(1/2)-1/2*I*a*polylog(2,-I*(1+I*x)^(1/2)/(1-I*x)^(1/2))*(x^2+1)^(1/2)/(a*x^
2+a)^(1/2)+1/2*I*a*polylog(2,I*(1+I*x)^(1/2)/(1-I*x)^(1/2))*(x^2+1)^(1/2)/(
a*x^2+a)^(1/2)+1/2*(a*x^2+a)^(1/2)+1/2*x*arccot(x)*(a*x^2+a)^(1/2)
```

Rubi [A] time = 0.07, antiderivative size = 195, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.214, Rules used = {4879, 4891, 4887}

$$-\frac{ia\sqrt{x^2+1}\,\text{PolyLog}\left(2,-\frac{i\sqrt{1+ix}}{\sqrt{1-ix}}\right)}{2\sqrt{ax^2+a}}+\frac{ia\sqrt{x^2+1}\,\text{PolyLog}\left(2,\frac{i\sqrt{1+ix}}{\sqrt{1-ix}}\right)}{2\sqrt{ax^2+a}}+\frac{1}{2}\sqrt{ax^2+a}+\frac{1}{2}x\sqrt{ax^2+a}\,\cot^{-1}(x)-\frac{ia\sqrt{x^2+}\cdots}{}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[a + a*x^2]*ArcCot[x],x]
```

```
[Out] Sqrt[a + a*x^2]/2 + (x*Sqrt[a + a*x^2]*ArcCot[x])/2 - (I*a*Sqrt[1 + x^2]*Ar
cCot[x]*ArcTan[Sqrt[1 + I*x]/Sqrt[1 - I*x]])/Sqrt[a + a*x^2] - ((I/2)*a*Sqr
t[1 + x^2]*PolyLog[2, ((-I)*Sqrt[1 + I*x])/Sqrt[1 - I*x]])/Sqrt[a + a*x^2]
+ ((I/2)*a*Sqrt[1 + x^2]*PolyLog[2, (I*Sqrt[1 + I*x])/Sqrt[1 - I*x]])/Sqrt[
a + a*x^2]
```

Rule 4879

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))*((d_) + (e_.)*(x_)^2)^(q_.), x_Symbo
l] :> Simp[(b*(d + e*x^2)^q)/(2*c*q*(2*q + 1)), x] + (Dist[(2*d*q)/(2*q + 1
), Int[(d + e*x^2)^(q - 1)*(a + b*ArcCot[c*x]), x], x] + Simp[(x*(d + e*x^2
)^q*(a + b*ArcCot[c*x]))/(2*q + 1), x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ
[e, c^2*d] && GtQ[q, 0]
```

Rule 4887

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))/Sqrt[(d_) + (e_.)*(x_)^2], x_Symbol]
 :> Simp[(-2*I*(a + b*ArcCot[c*x])*ArcTan[Sqrt[1 + I*c*x]/Sqrt[1 - I*c*x]])
/(c*Sqrt[d]), x] + (-Simp[(I*b*PolyLog[2, -((I*Sqrt[1 + I*c*x])/Sqrt[1 - I*
c*x])])/(c*Sqrt[d]), x] + Simp[(I*b*PolyLog[2, (I*Sqrt[1 + I*c*x])/Sqrt[1 -
 I*c*x]])/(c*Sqrt[d]), x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[e, c^2*d] &&
 GtQ[d, 0]
```

Rule 4891

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Dist[Sqrt[1 + c^2*x^2]/Sqrt[d + e*x^2], Int[(a + b*ArcCot[c*x])^p
/Sqrt[1 + c^2*x^2], x], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[e, c^2*d] &&
 IGtQ[p, 0] && !GtQ[d, 0]
```

Rubi steps

$$\int \sqrt{a+ax^2}\cot^{-1}(x)\,dx = \frac{1}{2}\sqrt{a+ax^2} + \frac{1}{2}x\sqrt{a+ax^2}\cot^{-1}(x) + \frac{1}{2}a\int \frac{\cot^{-1}(x)}{\sqrt{a+ax^2}}\,dx$$

$$= \frac{1}{2}\sqrt{a+ax^2} + \frac{1}{2}x\sqrt{a+ax^2}\cot^{-1}(x) + \frac{\left(a\sqrt{1+x^2}\right)\int \frac{\cot^{-1}(x)}{\sqrt{1+x^2}}\,dx}{2\sqrt{a+ax^2}}$$

$$= \frac{1}{2}\sqrt{a+ax^2} + \frac{1}{2}x\sqrt{a+ax^2}\cot^{-1}(x) - \frac{ia\sqrt{1+x^2}\cot^{-1}(x)\tan^{-1}\left(\frac{\sqrt{1+ix}}{\sqrt{1-ix}}\right)}{\sqrt{a+ax^2}} - \frac{ia\sqrt{1+}}{2}$$

Mathematica [A] time = 1.25, size = 136, normalized size = 0.70

$$-\frac{\left(a\left(x^2+1\right)\right)^{3/2}\left(4i\text{Li}_2\left(-e^{i\cot^{-1}(x)}\right) - 4i\text{Li}_2\left(e^{i\cot^{-1}(x)}\right) - 2\cot\left(\frac{1}{2}\cot^{-1}(x)\right) + 4\cot^{-1}(x)\log\left(1-e^{i\cot^{-1}(x)}\right) - 4\,\text{c}\right.}{8a\left(\frac{1}{x^2}+1\right.}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[Sqrt[a + a*x^2]*ArcCot[x],x]
```

```
[Out] -1/8*((a*(1 + x^2))^(3/2)*(-2*Cot[ArcCot[x]/2] - ArcCot[x]*Csc[ArcCot[x]/2]
^2 + 4*ArcCot[x]*Log[1 - E^(I*ArcCot[x])] - 4*ArcCot[x]*Log[1 + E^(I*ArcCot
[x])] + (4*I)*PolyLog[2, -E^(I*ArcCot[x])] - (4*I)*PolyLog[2, E^(I*ArcCot[x
])] + ArcCot[x]*Sec[ArcCot[x]/2]^2 - 2*Tan[ArcCot[x]/2]))/(a*(1 + x^(-2))^(
3/2)*x^3)
```

fricas [F] time = 1.64, size = 0, normalized size = 0.00

$$\text{integral}\left(\sqrt{ax^2+a}\,\text{arccot}(x), x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*x^2+a)^(1/2)*arccot(x),x, algorithm="fricas")
```

```
[Out] integral(sqrt(a*x^2 + a)*arccot(x), x)
```

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

$$\int \sqrt{ax^2+a}\,\text{arccot}(x)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*x^2+a)^(1/2)*arccot(x),x, algorithm="giac")
```

```
[Out] integrate(sqrt(a*x^2 + a)*arccot(x), x)
```

maple [A] time = 1.07, size = 117, normalized size = 0.60

$$\frac{\sqrt{a(x+i)(x-i)}\,(x\,\text{arccot}(x)+1)}{2} - \frac{i\sqrt{a(x+i)(x-i)}\left(i\text{arccot}(x)\ln\left(1+\frac{x+i}{\sqrt{x^2+1}}\right) - i\text{arccot}(x)\ln\left(1-\frac{x+i}{\sqrt{x^2+1}}\right)\right.}{2\sqrt{x^2+1}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*x^2+a)^(1/2)*arccot(x),x)
```

```
[Out] 1/2*(a*(x+I)*(x-I))^(1/2)*(x*arccot(x)+1)-1/2*I*(a*(x+I)*(x-I))^(1/2)*(I*ar
ccot(x)*ln(1+(x+I)/(x^2+1)^(1/2))-I*arccot(x)*ln(1-(x+I)/(x^2+1)^(1/2))+pol
ylog(2,-(x+I)/(x^2+1)^(1/2))-polylog(2,(x+I)/(x^2+1)^(1/2)))/(x^2+1)^(1/2)
```

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

$$\int \sqrt{ax^2 + a}\,\operatorname{arccot}(x)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*x^2+a)^(1/2)*arccot(x),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(a*x^2 + a)*arccot(x), x)
```

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

$$\int \operatorname{acot}(x)\,\sqrt{a\,x^2 + a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(acot(x)*(a + a*x^2)^(1/2),x)
```

```
[Out] int(acot(x)*(a + a*x^2)^(1/2), x)
```

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

$$\int \sqrt{a\left(x^2+1\right)}\,\operatorname{acot}\left(x\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*x**2+a)**(1/2)*acot(x),x)
```

```
[Out] Integral(sqrt(a*(x**2 + 1))*acot(x), x)
```

3.66 $\int \frac{\cot^{-1}(x)}{\sqrt{a+ax^2}}\,dx$

Optimal. Leaf size=155

$$-\frac{i\sqrt{x^2+1}\,\mathrm{Li}_2\left(-\frac{i\sqrt{ix+1}}{\sqrt{1-ix}}\right)}{\sqrt{ax^2+a}}+\frac{i\sqrt{x^2+1}\,\mathrm{Li}_2\left(\frac{i\sqrt{ix+1}}{\sqrt{1-ix}}\right)}{\sqrt{ax^2+a}}-\frac{2i\sqrt{x^2+1}\,\tan^{-1}\left(\frac{\sqrt{1+ix}}{\sqrt{1-ix}}\right)\cot^{-1}(x)}{\sqrt{ax^2+a}}$$

```
[Out] -2*I*arccot(x)*arctan((1+I*x)^(1/2)/(1-I*x)^(1/2))*(x^2+1)^(1/2)/(a*x^2+a)^
(1/2)-I*polylog(2,-I*(1+I*x)^(1/2)/(1-I*x)^(1/2))*(x^2+1)^(1/2)/(a*x^2+a)^(
1/2)+I*polylog(2,I*(1+I*x)^(1/2)/(1-I*x)^(1/2))*(x^2+1)^(1/2)/(a*x^2+a)^(1/
2)
```

Rubi [A] time = 0.04, antiderivative size = 155, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {4891, 4887}

$$-\frac{i\sqrt{x^2+1}\,\mathrm{PolyLog}\left(2,-\frac{i\sqrt{1+ix}}{\sqrt{1-ix}}\right)}{\sqrt{ax^2+a}}+\frac{i\sqrt{x^2+1}\,\mathrm{PolyLog}\left(2,\frac{i\sqrt{1+ix}}{\sqrt{1-ix}}\right)}{\sqrt{ax^2+a}}-\frac{2i\sqrt{x^2+1}\,\tan^{-1}\left(\frac{\sqrt{1+ix}}{\sqrt{1-ix}}\right)\cot^{-1}(x)}{\sqrt{ax^2+a}}$$

Antiderivative was successfully verified.

```
[In] Int[ArcCot[x]/Sqrt[a + a*x^2],x]
```

```
[Out] ((-2*I)*Sqrt[1 + x^2]*ArcCot[x]*ArcTan[Sqrt[1 + I*x]/Sqrt[1 - I*x]])/Sqrt[a
 + a*x^2] - (I*Sqrt[1 + x^2]*PolyLog[2, ((-I)*Sqrt[1 + I*x])/Sqrt[1 - I*x]]
)/Sqrt[a + a*x^2] + (I*Sqrt[1 + x^2]*PolyLog[2, (I*Sqrt[1 + I*x])/Sqrt[1 -
I*x]])/Sqrt[a + a*x^2]
```

Rule 4887

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))/Sqrt[(d_) + (e_.)*(x_)^2], x_Symbol]
 :> Simp[(-2*I*(a + b*ArcCot[c*x])*ArcTan[Sqrt[1 + I*c*x]/Sqrt[1 - I*c*x]])
/(c*Sqrt[d]), x] + (-Simp[(I*b*PolyLog[2, -((I*Sqrt[1 + I*c*x])/Sqrt[1 - I*
c*x])])/(c*Sqrt[d]), x] + Simp[(I*b*PolyLog[2, (I*Sqrt[1 + I*c*x])/Sqrt[1 -
 I*c*x]])/(c*Sqrt[d]), x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[e, c^2*d] &&
 GtQ[d, 0]
```

Rule 4891

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Dist[Sqrt[1 + c^2*x^2]/Sqrt[d + e*x^2], Int[(a + b*ArcCot[c*x])^p
/Sqrt[1 + c^2*x^2], x], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[e, c^2*d] &&
 IGtQ[p, 0] &&  !GtQ[d, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{\cot^{-1}(x)}{\sqrt{a+ax^2}}\,dx &= \frac{\sqrt{1+x^2}\int \frac{\cot^{-1}(x)}{\sqrt{1+x^2}}\,dx}{\sqrt{a+ax^2}}\\ &= -\frac{2i\sqrt{1+x^2}\,\cot^{-1}(x)\tan^{-1}\left(\frac{\sqrt{1+ix}}{\sqrt{1-ix}}\right)}{\sqrt{a+ax^2}}-\frac{i\sqrt{1+x^2}\,\mathrm{Li}_2\left(-\frac{i\sqrt{1+ix}}{\sqrt{1-ix}}\right)}{\sqrt{a+ax^2}}+\frac{i\sqrt{1+x^2}\,\mathrm{Li}_2\left(\frac{i\sqrt{1+ix}}{\sqrt{1-ix}}\right)}{\sqrt{a+ax^2}}\end{aligned}$$

Mathematica [A] time = 0.12, size = 89, normalized size = 0.57

$$-\frac{\sqrt{a\left(x^2+1\right)}\left(i\text{Li}_2\left(-e^{i\cot^{-1}(x)}\right)-i\text{Li}_2\left(e^{i\cot^{-1}(x)}\right)+\cot^{-1}(x)\left(\log\left(1-e^{i\cot^{-1}(x)}\right)-\log\left(1+e^{i\cot^{-1}(x)}\right)\right)\right)}{a\sqrt{\frac{1}{x^2}+1}\,x}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[ArcCot[x]/Sqrt[a + a*x^2],x]
```

```
[Out] -((Sqrt[a*(1 + x^2)]*(ArcCot[x]*(Log[1 - E^(I*ArcCot[x])] - Log[1 + E^(I*Ar
cCot[x])]) + I*PolyLog[2, -E^(I*ArcCot[x])] - I*PolyLog[2, E^(I*ArcCot[x])]
))/(a*Sqrt[1 + x^(-2)]*x))
```

fricas [F] time = 0.58, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\text{arccot}(x)}{\sqrt{ax^2+a}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(x)/(a*x^2+a)^(1/2),x, algorithm="fricas")
```

```
[Out] integral(arccot(x)/sqrt(a*x^2 + a), x)
```

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

$$\int\frac{\text{arccot}(x)}{\sqrt{ax^2+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(x)/(a*x^2+a)^(1/2),x, algorithm="giac")
```

```
[Out] integrate(arccot(x)/sqrt(a*x^2 + a), x)
```

maple [A] time = 0.92, size = 99, normalized size = 0.64

$$\frac{i\left(i\text{arccot}(x)\ln\left(1-\frac{x+i}{\sqrt{x^2+1}}\right)-i\text{arccot}(x)\ln\left(1+\frac{x+i}{\sqrt{x^2+1}}\right)+\text{polylog}\left(2,\frac{x+i}{\sqrt{x^2+1}}\right)-\text{polylog}\left(2,-\frac{x+i}{\sqrt{x^2+1}}\right)\right)\sqrt{a\,(x+i)}}{\sqrt{x^2+1}\;a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arccot(x)/(a*x^2+a)^(1/2),x)
```

```
[Out] I*(I*ln(1-(x+I)/(x^2+1)^(1/2))*arccot(x)-I*ln(1+(x+I)/(x^2+1)^(1/2))*arccot
(x)+polylog(2,(x+I)/(x^2+1)^(1/2))-polylog(2,-(x+I)/(x^2+1)^(1/2)))*(a*(x+I
)*(x-I))^(1/2)/(x^2+1)^(1/2)/a
```

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

$$\int\frac{\text{arccot}(x)}{\sqrt{ax^2+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(x)/(a*x^2+a)^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(arccot(x)/sqrt(a*x^2 + a), x)
```

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

$$\int\frac{\text{acot}(x)}{\sqrt{a\,x^2+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(acot(x)/(a + a*x^2)^(1/2),x)
[Out] int(acot(x)/(a + a*x^2)^(1/2), x)
```

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

$$\int \frac{\operatorname{acot}(x)}{\sqrt{a\left(x^2+1\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(acot(x)/(a*x**2+a)**(1/2),x)
[Out] Integral(acot(x)/sqrt(a*(x**2 + 1)), x)
```

3.67 $\int \frac{\cot^{-1}(x)}{\left(a+ax^2\right)^{3/2}}\,dx$

Optimal. Leaf size=35

$$\frac{x\cot^{-1}(x)}{a\sqrt{ax^2+a}}-\frac{1}{a\sqrt{ax^2+a}}$$

```
[Out] -1/a/(a*x^2+a)^(1/2)+x*arccot(x)/a/(a*x^2+a)^(1/2)
```

Rubi [A] time = 0.02, antiderivative size = 35, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.071, Rules used = {4895}

$$\frac{x\cot^{-1}(x)}{a\sqrt{ax^2+a}}-\frac{1}{a\sqrt{ax^2+a}}$$

Antiderivative was successfully verified.

```
[In] Int[ArcCot[x]/(a + a*x^2)^(3/2),x]
```

```
[Out] -(1/(a*Sqrt[a + a*x^2])) + (x*ArcCot[x])/(a*Sqrt[a + a*x^2])
```

Rule 4895

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))/((d_) + (e_.)*(x_)^2)^(3/2), x_Symbo
l] :> -Simp[b/(c*d*Sqrt[d + e*x^2]), x] + Simp[(x*(a + b*ArcCot[c*x]))/(d*S
qrt[d + e*x^2]), x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[e, c^2*d]
```

Rubi steps

$$\int \frac{\cot^{-1}(x)}{\left(a+ax^2\right)^{3/2}}\,dx=-\frac{1}{a\sqrt{a+ax^2}}+\frac{x\cot^{-1}(x)}{a\sqrt{a+ax^2}}$$

Mathematica [A] time = 0.03, size = 21, normalized size = 0.60

$$\frac{x\cot^{-1}(x)-1}{a\sqrt{a\left(x^2+1\right)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcCot[x]/(a + a*x^2)^(3/2),x]
```

```
[Out] (-1 + x*ArcCot[x])/(a*Sqrt[a*(1 + x^2)])
```

fricas [A] time = 3.04, size = 29, normalized size = 0.83

$$\frac{\sqrt{ax^2+a}\,(x\,\mathrm{arccot}(x)-1)}{a^2x^2+a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(x)/(a*x^2+a)^(3/2),x, algorithm="fricas")
```

```
[Out] sqrt(a*x^2 + a)*(x*arccot(x) - 1)/(a^2*x^2 + a^2)
```

giac [A] time = 0.15, size = 33, normalized size = 0.94

$$\frac{x\arctan\left(\frac{1}{x}\right)}{\sqrt{ax^2+a}\,a}-\frac{1}{\sqrt{ax^2+a}\,a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(x)/(a*x^2+a)^(3/2),x, algorithm="giac")
[Out] x*arctan(1/x)/(sqrt(a*x^2 + a)*a) - 1/(sqrt(a*x^2 + a)*a)
```

maple [C] time = 0.70, size = 68, normalized size = 1.94

$$\frac{(i+\operatorname{arccot}(x))\,(x+i)\,\sqrt{a\,(x+i)\,(x-i)}}{2\left(x^2+1\right)a^2}+\frac{\sqrt{a\,(x+i)\,(x-i)}\,\;(x-i)\,(\operatorname{arccot}(x)-i)}{2\left(x^2+1\right)a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arccot(x)/(a*x^2+a)^(3/2),x)
[Out] 1/2*(I+arccot(x))*(x+I)*(a*(x+I)*(x-I))^(1/2)/(x^2+1)/a^2+1/2*(a*(x+I)*(x-I
))^(1/2)*(x-I)*(arccot(x)-I)/(x^2+1)/a^2
```

maxima [A] time = 0.48, size = 31, normalized size = 0.89

$$\frac{x\operatorname{arccot}(x)}{\sqrt{ax^2+a}\,a}-\frac{1}{\sqrt{ax^2+a}\,a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(x)/(a*x^2+a)^(3/2),x, algorithm="maxima")
[Out] x*arccot(x)/(sqrt(a*x^2 + a)*a) - 1/(sqrt(a*x^2 + a)*a)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\operatorname{acot}(x)}{\left(a\,x^2+a\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(acot(x)/(a + a*x^2)^(3/2),x)
[Out] int(acot(x)/(a + a*x^2)^(3/2), x)
```

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

$$\int \frac{\operatorname{acot}(x)}{\left(a\left(x^2+1\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(acot(x)/(a*x**2+a)**(3/2),x)
[Out] Integral(acot(x)/(a*(x**2 + 1))**(3/2), x)
```

3.68 $\int \frac{\cot^{-1}(x)}{(a+ax^2)^{5/2}} \, dx$

Optimal. Leaf size=79

$$-\frac{2}{3a^2\sqrt{ax^2+a}}+\frac{2x\cot^{-1}(x)}{3a^2\sqrt{ax^2+a}}-\frac{1}{9a\left(ax^2+a\right)^{3/2}}+\frac{x\cot^{-1}(x)}{3a\left(ax^2+a\right)^{3/2}}$$

```
[Out] -1/9/a/(a*x^2+a)^(3/2)+1/3*x*arccot(x)/a/(a*x^2+a)^(3/2)-2/3/a^2/(a*x^2+a)^
(1/2)+2/3*x*arccot(x)/a^2/(a*x^2+a)^(1/2)
```

Rubi [A] time = 0.04, antiderivative size = 79, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {4897, 4895}

$$-\frac{2}{3a^2\sqrt{ax^2+a}}+\frac{2x\cot^{-1}(x)}{3a^2\sqrt{ax^2+a}}-\frac{1}{9a\left(ax^2+a\right)^{3/2}}+\frac{x\cot^{-1}(x)}{3a\left(ax^2+a\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[ArcCot[x]/(a + a*x^2)^(5/2),x]
```

```
[Out] -1/(9*a*(a + a*x^2)^(3/2)) - 2/(3*a^2*Sqrt[a + a*x^2]) + (x*ArcCot[x])/(3*a
*(a + a*x^2)^(3/2)) + (2*x*ArcCot[x])/(3*a^2*Sqrt[a + a*x^2])
```

Rule 4895

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))/((d_) + (e_.)*(x_)^2)^(3/2), x_Symbo
l] :> -Simp[b/(c*d*Sqrt[d + e*x^2]), x] + Simp[(x*(a + b*ArcCot[c*x]))/(d*S
qrt[d + e*x^2]), x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[e, c^2*d]
```

Rule 4897

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))*((d_) + (e_.)*(x_)^2)^(q_), x_Symbol
] :> -Simp[(b*(d + e*x^2)^(q + 1))/(4*c*d*(q + 1)^2), x] + (Dist[(2*q + 3)/
(2*d*(q + 1)), Int[(d + e*x^2)^(q + 1)*(a + b*ArcCot[c*x]), x], x] - Simp[(
x*(d + e*x^2)^(q + 1)*(a + b*ArcCot[c*x]))/(2*d*(q + 1)), x]) /; FreeQ[{a,
b, c, d, e}, x] && EqQ[e, c^2*d] && LtQ[q, -1] && NeQ[q, -3/2]
```

Rubi steps

$$\begin{aligned}
\int \frac{\cot^{-1}(x)}{\left(a+ax^2\right)^{5/2}}\,dx &= -\frac{1}{9a\left(a+ax^2\right)^{3/2}}+\frac{x\cot^{-1}(x)}{3a\left(a+ax^2\right)^{3/2}}+\frac{2\int \frac{\cot^{-1}(x)}{\left(a+ax^2\right)^{3/2}}\,dx}{3a}\\
&= -\frac{1}{9a\left(a+ax^2\right)^{3/2}}-\frac{2}{3a^2\sqrt{a+ax^2}}+\frac{x\cot^{-1}(x)}{3a\left(a+ax^2\right)^{3/2}}+\frac{2x\cot^{-1}(x)}{3a^2\sqrt{a+ax^2}}
\end{aligned}$$

Mathematica [A] time = 0.03, size = 37, normalized size = 0.47

$$\frac{\left(6x^3+9x\right)\cot^{-1}(x)-6x^2-7}{9a\left(a\left(x^2+1\right)\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcCot[x]/(a + a*x^2)^(5/2),x]
```

```
[Out] (-7 - 6*x^2 + (9*x + 6*x^3)*ArcCot[x])/(9*a*(a*(1 + x^2))^(3/2))
```

fricas [A] time = 0.54, size = 52, normalized size = 0.66

$$-\frac{\sqrt{ax^2+a}\left(6x^2-3\left(2x^3+3x\right)\operatorname{arccot}(x)+7\right)}{9\left(a^3x^4+2a^3x^2+a^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(x)/(a*x^2+a)^(5/2),x, algorithm="fricas")
```

```
[Out] -1/9*sqrt(a*x^2 + a)*(6*x^2 - 3*(2*x^3 + 3*x)*arccot(x) + 7)/(a^3*x^4 + 2*a
^3*x^2 + a^3)
```

giac [A] time = 0.15, size = 55, normalized size = 0.70

$$\frac{x\left(\frac{2x^2}{a}+\frac{3}{a}\right)\arctan\left(\frac{1}{x}\right)}{3\left(ax^2+a\right)^{\frac{3}{2}}}-\frac{6ax^2+7a}{9\left(ax^2+a\right)^{\frac{3}{2}}a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(x)/(a*x^2+a)^(5/2),x, algorithm="giac")
```

```
[Out] 1/3*x*(2*x^2/a + 3/a)*arctan(1/x)/(a*x^2 + a)^(3/2) - 1/9*(6*a*x^2 + 7*a)/(
(a*x^2 + a)^(3/2)*a^2)
```

maple [C] time = 0.75, size = 165, normalized size = 2.09

$$-\frac{(i+3\operatorname{arccot}(x))\left(x^3+3ix^2-3x-i\right)\sqrt{a(x+i)(x-i)}}{72\left(x^2+1\right)^2a^3}+\frac{3(i+\operatorname{arccot}(x))(x+i)\sqrt{a(x+i)(x-i)}}{8a^3\left(x^2+1\right)}+\frac{3\sqrt{a(x+}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arccot(x)/(a*x^2+a)^(5/2),x)
```

```
[Out] -1/72*(I+3*arccot(x))*(3*I*x^2+x^3-I-3*x)*(a*(x+I)*(x-I))^(1/2)/(x^2+1)^2/a
^3+3/8*(I+arccot(x))*(x+I)*(a*(x+I)*(x-I))^(1/2)/a^3/(x^2+1)+3/8*(a*(x+I)*(
x-I))^(1/2)*(x-I)*(arccot(x)-I)/a^3/(x^2+1)-1/72*(-I+3*arccot(x))*(a*(x+I)*
(x-I))^(1/2)*(-3*x-3*I*x^2+x^3+I)/(x^4+2*x^2+1)/a^3
```

maxima [A] time = 0.45, size = 63, normalized size = 0.80

$$\frac{1}{3}\left(\frac{2x}{\sqrt{ax^2+a}\,a^2}+\frac{x}{\left(ax^2+a\right)^{\frac{3}{2}}a}\right)\operatorname{arccot}(x)-\frac{2}{3\sqrt{ax^2+a}\,a^2}-\frac{1}{9\left(ax^2+a\right)^{\frac{3}{2}}a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(x)/(a*x^2+a)^(5/2),x, algorithm="maxima")
```

```
[Out] 1/3*(2*x/(sqrt(a*x^2 + a)*a^2) + x/((a*x^2 + a)^(3/2)*a))*arccot(x) - 2/3/(
sqrt(a*x^2 + a)*a^2) - 1/9/((a*x^2 + a)^(3/2)*a)
```

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

$$\int \frac{\operatorname{acot}(x)}{\left(a\,x^2+a\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(acot(x)/(a + a*x^2)^(5/2),x)
[Out] int(acot(x)/(a + a*x^2)^(5/2), x)
```

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

$$\int \frac{\operatorname{acot}(x)}{\left(a\left(x^2+1\right)\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(acot(x)/(a*x**2+a)**(5/2),x)
[Out] Integral(acot(x)/(a*(x**2 + 1))**(5/2), x)
```

3.69 $\int \frac{\cot^{-1}(x)}{(a+ax^2)^{7/2}}\,dx$

Optimal. Leaf size=118

$$-\frac{8}{15a^3\sqrt{ax^2+a}}+\frac{8x\cot^{-1}(x)}{15a^3\sqrt{ax^2+a}}-\frac{4}{45a^2\left(ax^2+a\right)^{3/2}}+\frac{4x\cot^{-1}(x)}{15a^2\left(ax^2+a\right)^{3/2}}-\frac{1}{25a\left(ax^2+a\right)^{5/2}}+\frac{x\cot^{-1}(x)}{5a\left(ax^2+a\right)^{5/2}}$$

```
[Out] -1/25/a/(a*x^2+a)^(5/2)-4/45/a^2/(a*x^2+a)^(3/2)+1/5*x*arccot(x)/a/(a*x^2+a
)^(5/2)+4/15*x*arccot(x)/a^2/(a*x^2+a)^(3/2)-8/15/a^3/(a*x^2+a)^(1/2)+8/15*
x*arccot(x)/a^3/(a*x^2+a)^(1/2)
```

Rubi [A] time = 0.07, antiderivative size = 118, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {4897, 4895}

$$-\frac{8}{15a^3\sqrt{ax^2+a}}-\frac{4}{45a^2\left(ax^2+a\right)^{3/2}}+\frac{8x\cot^{-1}(x)}{15a^3\sqrt{ax^2+a}}+\frac{4x\cot^{-1}(x)}{15a^2\left(ax^2+a\right)^{3/2}}-\frac{1}{25a\left(ax^2+a\right)^{5/2}}+\frac{x\cot^{-1}(x)}{5a\left(ax^2+a\right)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[ArcCot[x]/(a + a*x^2)^(7/2),x]
```

```
[Out] -1/(25*a*(a + a*x^2)^(5/2)) - 4/(45*a^2*(a + a*x^2)^(3/2)) - 8/(15*a^3*Sqrt
[a + a*x^2]) + (x*ArcCot[x])/(5*a*(a + a*x^2)^(5/2)) + (4*x*ArcCot[x])/(15*
a^2*(a + a*x^2)^(3/2)) + (8*x*ArcCot[x])/(15*a^3*Sqrt[a + a*x^2])
```

Rule 4895

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))/((d_) + (e_.)*(x_)^2)^(3/2), x_Symbo
l] :> -Simp[b/(c*d*Sqrt[d + e*x^2]), x] + Simp[(x*(a + b*ArcCot[c*x]))/(d*S
qrt[d + e*x^2]), x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[e, c^2*d]
```

Rule 4897

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))*((d_) + (e_.)*(x_)^2)^(q_), x_Symbol
] :> -Simp[(b*(d + e*x^2)^(q + 1))/(4*c*d*(q + 1)^2), x] + (Dist[(2*q + 3)/
(2*d*(q + 1)), Int[(d + e*x^2)^(q + 1)*(a + b*ArcCot[c*x]), x], x] - Simp[(
x*(d + e*x^2)^(q + 1)*(a + b*ArcCot[c*x]))/(2*d*(q + 1)), x]) /; FreeQ[{a,
b, c, d, e}, x] && EqQ[e, c^2*d] && LtQ[q, -1] && NeQ[q, -3/2]
```

Rubi steps

$$\int \frac{\cot^{-1}(x)}{\left(a+ax^2\right)^{7/2}}\,dx=-\frac{1}{25a\left(a+ax^2\right)^{5/2}}+\frac{x\cot^{-1}(x)}{5a\left(a+ax^2\right)^{5/2}}+\frac{4\int\frac{\cot^{-1}(x)}{\left(a+ax^2\right)^{5/2}}\,dx}{5a}$$

$$=-\frac{1}{25a\left(a+ax^2\right)^{5/2}}-\frac{4}{45a^2\left(a+ax^2\right)^{3/2}}+\frac{x\cot^{-1}(x)}{5a\left(a+ax^2\right)^{5/2}}+\frac{4x\cot^{-1}(x)}{15a^2\left(a+ax^2\right)^{3/2}}+\frac{8\int\frac{\cot^{-1}(x)}{\left(a+ax^2\right)^{3/2}}\,dx}{15a^2}$$

$$=-\frac{1}{25a\left(a+ax^2\right)^{5/2}}-\frac{4}{45a^2\left(a+ax^2\right)^{3/2}}-\frac{8}{15a^3\sqrt{a+ax^2}}+\frac{x\cot^{-1}(x)}{5a\left(a+ax^2\right)^{5/2}}+\frac{4x\cot^{-1}(x)}{15a^2\left(a+ax^2\right)^{3/2}}+\ldots$$

Mathematica [A] time = 0.04, size = 47, normalized size = 0.40

$$\frac{-120x^4 - 260x^2 + 15\left(8x^4 + 20x^2 + 15\right)x\cot^{-1}(x) - 149}{225a\left(a\left(x^2+1\right)\right)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcCot[x]/(a + a*x^2)^(7/2),x]
```

```
[Out] (-149 - 260*x^2 - 120*x^4 + 15*x*(15 + 20*x^2 + 8*x^4)*ArcCot[x])/(225*a*(a
*(1 + x^2))^(5/2))
```

fricas [A] time = 0.62, size = 70, normalized size = 0.59

$$-\frac{\left(120\,x^4 + 260\,x^2 - 15\left(8\,x^5 + 20\,x^3 + 15\,x\right)\operatorname{arccot}(x) + 149\right)\sqrt{ax^2+a}}{225\left(a^4x^6 + 3\,a^4x^4 + 3\,a^4x^2 + a^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(x)/(a*x^2+a)^(7/2),x, algorithm="fricas")
```

```
[Out] -1/225*(120*x^4 + 260*x^2 - 15*(8*x^5 + 20*x^3 + 15*x)*arccot(x) + 149)*sqr
t(a*x^2 + a)/(a^4*x^6 + 3*a^4*x^4 + 3*a^4*x^2 + a^4)
```

giac [A] time = 0.17, size = 83, normalized size = 0.70

$$\frac{\left(4\,x^2\left(\frac{2\,x^2}{a} + \frac{5}{a}\right) + \frac{15}{a}\right)x\arctan\left(\frac{1}{x}\right)}{15\left(ax^2+a\right)^{\frac{5}{2}}} - \frac{120\left(ax^2+a\right)^2 + 20\left(ax^2+a\right)a + 9\,a^2}{225\left(ax^2+a\right)^{\frac{5}{2}}a^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(x)/(a*x^2+a)^(7/2),x, algorithm="giac")
```

```
[Out] 1/15*(4*x^2*(2*x^2/a + 5/a) + 15/a)*x*arctan(1/x)/(a*x^2 + a)^(5/2) - 1/225
*(120*(a*x^2 + a)^2 + 20*(a*x^2 + a)*a + 9*a^2)/((a*x^2 + a)^(5/2)*a^3)
```

maple [C] time = 0.85, size = 258, normalized size = 2.19

$$\frac{(i + 5\operatorname{arccot}(x))\left(x^5 + 5ix^4 - 10x^3 - 10ix^2 + 5x + i\right)\sqrt{a\,(x+i)\,(x-i)}}{800\left(x^2+1\right)^3 a^4} + \frac{5\,(i + \operatorname{arccot}(x))\,(x+i)\sqrt{a\,(x+i)\,(x-i)}}{16\left(x^2+1\right)a^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arccot(x)/(a*x^2+a)^(7/2),x)
```

```
[Out] 1/800*(I+5*arccot(x))*(5*I*x^4+x^5-10*I*x^2-10*x^3+I+5*x)*(a*(x+I)*(x-I))^(
1/2)/(x^2+1)^3/a^4+5/16*(I+arccot(x))*(x+I)*(a*(x+I)*(x-I))^(1/2)/(x^2+1)/a
^4+5/16*(a*(x+I)*(x-I))^(1/2)*(x-I)*(arccot(x)-I)/(x^2+1)/a^4-5/288*(-I+3*a
rccot(x))*(a*(x+I)*(x-I))^(1/2)*(-3*x-3*I*x^2+x^3+I)/(x^4+2*x^2+1)/a^4-1/36
00*(a*(x+I)*(x-I))^(1/2)*(x-I)*(67*I+165*arccot(x))*cos(4*arccot(x))/(x^2+1
)/a^4-1/1800*(a*(x+I)*(x-I))^(1/2)*(1+I*x)*(29*I+105*arccot(x))*sin(4*arcco
t(x))/(x^2+1)/a^4
```

maxima [A] time = 0.45, size = 93, normalized size = 0.79

$$\frac{1}{15}\left(\frac{8\,x}{\sqrt{ax^2+a}\,a^3} + \frac{4\,x}{\left(ax^2+a\right)^{\frac{3}{2}}a^2} + \frac{3\,x}{\left(ax^2+a\right)^{\frac{5}{2}}a}\right)\operatorname{arccot}(x) - \frac{8}{15\sqrt{ax^2+a}\,a^3} - \frac{4}{45\left(ax^2+a\right)^{\frac{3}{2}}a^2} - \frac{1}{25\left(ax^2+a\right)^{\frac{5}{2}}a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(x)/(a*x^2+a)^(7/2),x, algorithm="maxima")
```

```
[Out] 1/15*(8*x/(sqrt(a*x^2 + a)*a^3) + 4*x/((a*x^2 + a)^(3/2)*a^2) + 3*x/((a*x^2
 + a)^(5/2)*a))*arccot(x) - 8/15/(sqrt(a*x^2 + a)*a^3) - 4/45/((a*x^2 + a)^
(3/2)*a^2) - 1/25/((a*x^2 + a)^(5/2)*a)
```

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

$$\int \frac{\operatorname{acot}(x)}{\left(a\,x^2+a\right)^{7/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(acot(x)/(a + a*x^2)^(7/2),x)
```

```
[Out] int(acot(x)/(a + a*x^2)^(7/2), x)
```

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

$$\int \frac{\operatorname{acot}(x)}{\left(a\left(x^2+1\right)\right)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(acot(x)/(a*x**2+a)**(7/2),x)
```

```
[Out] Integral(acot(x)/(a*(x**2 + 1))**(7/2), x)
```

3.70 $\int \frac{x \cot^{-1}(x)}{(1+x^2)^2} \, dx$

Optimal. Leaf size=32

$$-\frac{x}{4\left(x^2+1\right)}-\frac{\cot^{-1}(x)}{2\left(x^2+1\right)}-\frac{1}{4}\tan^{-1}(x)$$

```
[Out] -1/4*x/(x^2+1)-1/2*arccot(x)/(x^2+1)-1/4*arctan(x)
```

Rubi [A] time = 0.03, antiderivative size = 32, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.273, Rules used = {4931, 199, 203}

$$-\frac{x}{4\left(x^2+1\right)}-\frac{\cot^{-1}(x)}{2\left(x^2+1\right)}-\frac{1}{4}\tan^{-1}(x)$$

Antiderivative was successfully verified.

```
[In] Int[(x*ArcCot[x])/(1 + x^2)^2,x]
```

```
[Out] -x/(4*(1 + x^2)) - ArcCot[x]/(2*(1 + x^2)) - ArcTan[x]/4
```

Rule 199

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> -Simp[(x*(a + b*x^n)^(p + 1
))/(a*n*(p + 1)), x] + Dist[(n*(p + 1) + 1)/(a*n*(p + 1)), Int[(a + b*x^n)^
(p + 1), x], x] /; FreeQ[{a, b}, x] && IGtQ[n, 0] && LtQ[p, -1] && (Integer
Q[2*p] || (n == 2 && IntegerQ[4*p]) || (n == 2 && IntegerQ[3*p]) || Denomin
ator[p + 1/n] < Denominator[p])
```

Rule 203

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

Rule 4931

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)*(x_)*((d_) + (e_.)*(x_)^2)^(q_
.), x_Symbol] :> Simp[((d + e*x^2)^(q + 1)*(a + b*ArcCot[c*x])^p)/(2*e*(q +
 1)), x] + Dist[(b*p)/(2*c*(q + 1)), Int[(d + e*x^2)^q*(a + b*ArcCot[c*x])^
(p - 1), x], x] /; FreeQ[{a, b, c, d, e, q}, x] && EqQ[e, c^2*d] && GtQ[p,
0] && NeQ[q, -1]
```

Rubi steps

$$\begin{aligned}
\int \frac{x \cot^{-1}(x)}{\left(1+x^2\right)^2} \, dx &= -\frac{\cot^{-1}(x)}{2\left(1+x^2\right)}-\frac{1}{2}\int \frac{1}{\left(1+x^2\right)^2} \, dx \\
&= -\frac{x}{4\left(1+x^2\right)}-\frac{\cot^{-1}(x)}{2\left(1+x^2\right)}-\frac{1}{4}\int \frac{1}{1+x^2} \, dx \\
&= -\frac{x}{4\left(1+x^2\right)}-\frac{\cot^{-1}(x)}{2\left(1+x^2\right)}-\frac{1}{4}\tan^{-1}(x)
\end{aligned}$$

Mathematica [A] time = 0.02, size = 25, normalized size = 0.78

$$-\frac{x^2 \tan^{-1}(x) + x + \tan^{-1}(x) + 2\cot^{-1}(x)}{4x^2 + 4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*ArcCot[x])/(1 + x^2)^2,x]
[Out] -((x + 2*ArcCot[x] + ArcTan[x] + x^2*ArcTan[x])/(4 + 4*x^2))
```

fricas [A] time = 0.67, size = 21, normalized size = 0.66

$$\frac{(x^2 - 1)\operatorname{arccot}(x) - x}{4(x^2 + 1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*arccot(x)/(x^2+1)^2,x, algorithm="fricas")
[Out] 1/4*((x^2 - 1)*arccot(x) - x)/(x^2 + 1)
```

giac [A] time = 0.13, size = 32, normalized size = 1.00

$$-\frac{\arctan\left(\frac{1}{x}\right)}{2(x^2+1)} - \frac{1}{4x\left(\frac{1}{x^2}+1\right)} + \frac{1}{4}\arctan\left(\frac{1}{x}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*arccot(x)/(x^2+1)^2,x, algorithm="giac")
[Out] -1/2*arctan(1/x)/(x^2 + 1) - 1/4/(x*(1/x^2 + 1)) + 1/4*arctan(1/x)
```

maple [A] time = 0.04, size = 27, normalized size = 0.84

$$-\frac{x}{4(x^2+1)} - \frac{\operatorname{arccot}(x)}{2(x^2+1)} - \frac{\arctan(x)}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*arccot(x)/(x^2+1)^2,x)
[Out] -1/4*x/(x^2+1)-1/2*arccot(x)/(x^2+1)-1/4*arctan(x)
```

maxima [A] time = 0.45, size = 26, normalized size = 0.81

$$-\frac{x}{4(x^2+1)} - \frac{\operatorname{arccot}(x)}{2(x^2+1)} - \frac{1}{4}\arctan(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*arccot(x)/(x^2+1)^2,x, algorithm="maxima")
[Out] -1/4*x/(x^2 + 1) - 1/2*arccot(x)/(x^2 + 1) - 1/4*arctan(x)
```

mupad [B] time = 0.07, size = 22, normalized size = 0.69

$$\frac{\operatorname{acot}(x)}{4} - \frac{\frac{x}{4} + \frac{\operatorname{acot}(x)}{2}}{x^2+1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*acot(x))/(x^2 + 1)^2,x)
```

```
[Out] acot(x)/4 - (x/4 + acot(x)/2)/(x^2 + 1)
```

sympy [A] time = 0.50, size = 31, normalized size = 0.97

$$\frac{x^2\operatorname{acot}(x)}{4x^2+4}-\frac{x}{4x^2+4}-\frac{\operatorname{acot}(x)}{4x^2+4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*acot(x)/(x**2+1)**2,x)
```

```
[Out] x**2*acot(x)/(4*x**2 + 4) - x/(4*x**2 + 4) - acot(x)/(4*x**2 + 4)
```

3.71 $\int \frac{x\cot^{-1}(x)}{\left(1+x^2\right)^3}\,dx$

Optimal. Leaf size=44

$$-\frac{3x}{32\left(x^2+1\right)}-\frac{x}{16\left(x^2+1\right)^2}-\frac{\cot^{-1}(x)}{4\left(x^2+1\right)^2}-\frac{3}{32}\tan^{-1}(x)$$

```
[Out] -1/16*x/(x^2+1)^2-3/32*x/(x^2+1)-1/4*arccot(x)/(x^2+1)^2-3/32*arctan(x)
```

Rubi [A] time = 0.03, antiderivative size = 44, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.273, Rules used = {4931, 199, 203}

$$-\frac{3x}{32\left(x^2+1\right)}-\frac{x}{16\left(x^2+1\right)^2}-\frac{\cot^{-1}(x)}{4\left(x^2+1\right)^2}-\frac{3}{32}\tan^{-1}(x)$$

Antiderivative was successfully verified.

```
[In] Int[(x*ArcCot[x])/(1 + x^2)^3,x]
```

```
[Out] -x/(16*(1 + x^2)^2) - (3*x)/(32*(1 + x^2)) - ArcCot[x]/(4*(1 + x^2)^2) - (3
*ArcTan[x])/32
```

Rule 199

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> -Simp[(x*(a + b*x^n)^(p + 1
))/(a*n*(p + 1)), x] + Dist[(n*(p + 1) + 1)/(a*n*(p + 1)), Int[(a + b*x^n)^
(p + 1), x], x] /; FreeQ[{a, b}, x] && IGtQ[n, 0] && LtQ[p, -1] && (Integer
Q[2*p] || (n == 2 && IntegerQ[4*p]) || (n == 2 && IntegerQ[3*p]) || Denomin
ator[p + 1/n] < Denominator[p])
```

Rule 203

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

Rule 4931

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)*(x_)*((d_) + (e_.)*(x_)^2)^(q_
.), x_Symbol] :> Simp[((d + e*x^2)^(q + 1)*(a + b*ArcCot[c*x])^p)/(2*e*(q +
 1)), x] + Dist[(b*p)/(2*c*(q + 1)), Int[(d + e*x^2)^q*(a + b*ArcCot[c*x])^
(p - 1), x], x] /; FreeQ[{a, b, c, d, e, q}, x] && EqQ[e, c^2*d] && GtQ[p,
0] && NeQ[q, -1]
```

Rubi steps

$$\int \frac{x \cot^{-1}(x)}{\left(1+x^2\right)^3} dx = -\frac{\cot^{-1}(x)}{4\left(1+x^2\right)^2} - \frac{1}{4}\int \frac{1}{\left(1+x^2\right)^3} dx$$
$$= -\frac{x}{16\left(1+x^2\right)^2} - \frac{\cot^{-1}(x)}{4\left(1+x^2\right)^2} - \frac{3}{16}\int \frac{1}{\left(1+x^2\right)^2} dx$$
$$= -\frac{x}{16\left(1+x^2\right)^2} - \frac{3x}{32\left(1+x^2\right)} - \frac{\cot^{-1}(x)}{4\left(1+x^2\right)^2} - \frac{3}{32}\int \frac{1}{1+x^2} dx$$
$$= -\frac{x}{16\left(1+x^2\right)^2} - \frac{3x}{32\left(1+x^2\right)} - \frac{\cot^{-1}(x)}{4\left(1+x^2\right)^2} - \frac{3}{32}\tan^{-1}(x)$$

Mathematica [A] time = 0.03, size = 36, normalized size = 0.82

$$-\frac{x\left(3x^2+5\right)+3\left(x^2+1\right)^2\tan^{-1}(x)+8\cot^{-1}(x)}{32\left(x^2+1\right)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*ArcCot[x])/(1 + x^2)^3,x]
```

```
[Out] -1/32*(x*(5 + 3*x^2) + 8*ArcCot[x] + 3*(1 + x^2)^2*ArcTan[x])/(1 + x^2)^2
```

fricas [A] time = 1.97, size = 39, normalized size = 0.89

$$-\frac{3\,x^3-\left(3\,x^4+6\,x^2-5\right)\operatorname{arccot}(x)+5\,x}{32\left(x^4+2\,x^2+1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*arccot(x)/(x^2+1)^3,x, algorithm="fricas")
```

```
[Out] -1/32*(3*x^3 - (3*x^4 + 6*x^2 - 5)*arccot(x) + 5*x)/(x^4 + 2*x^2 + 1)
```

giac [A] time = 0.13, size = 40, normalized size = 0.91

$$-\frac{\frac{3}{x}+\frac{5}{x^3}}{32\left(\frac{1}{x^2}+1\right)^2} - \frac{\arctan\left(\frac{1}{x}\right)}{4\left(x^2+1\right)^2} + \frac{3}{32}\arctan\left(\frac{1}{x}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*arccot(x)/(x^2+1)^3,x, algorithm="giac")
```

```
[Out] -1/32*(3/x + 5/x^3)/(1/x^2 + 1)^2 - 1/4*arctan(1/x)/(x^2 + 1)^2 + 3/32*arct
an(1/x)
```

maple [A] time = 0.04, size = 37, normalized size = 0.84

$$-\frac{x}{16\left(x^2+1\right)^2} - \frac{3x}{32\left(x^2+1\right)} - \frac{\operatorname{arccot}(x)}{4\left(x^2+1\right)^2} - \frac{3\arctan(x)}{32}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*arccot(x)/(x^2+1)^3,x)
```

```
[Out] -1/16*x/(x^2+1)^2-3/32*x/(x^2+1)-1/4*arccot(x)/(x^2+1)^2-3/32*arctan(x)
```

maxima [A] time = 0.44, size = 39, normalized size = 0.89

$$-\frac{3\,x^3+5\,x}{32\,\left(x^4+2\,x^2+1\right)}-\frac{\operatorname{arccot}(x)}{4\,\left(x^2+1\right)^2}-\frac{3}{32}\,\arctan(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*arccot(x)/(x^2+1)^3,x, algorithm="maxima")
```

```
[Out] -1/32*(3*x^3 + 5*x)/(x^4 + 2*x^2 + 1) - 1/4*arccot(x)/(x^2 + 1)^2 - 3/32*ar
ctan(x)
```

mupad [B] time = 0.60, size = 27, normalized size = 0.61

$$-\frac{3\,\mathrm{atan}(x)}{32}-\frac{\frac{5\,x}{32}+\frac{\mathrm{acot}(x)}{4}+\frac{3\,x^3}{32}}{\left(x^2+1\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*acot(x))/(x^2 + 1)^3,x)
```

```
[Out] - (3*atan(x))/32 - ((5*x)/32 + acot(x)/4 + (3*x^3)/32)/(x^2 + 1)^2
```

sympy [B] time = 0.80, size = 88, normalized size = 2.00

$$\frac{3x^4\operatorname{acot}(x)}{32x^4+64x^2+32}-\frac{3x^3}{32x^4+64x^2+32}+\frac{6x^2\operatorname{acot}(x)}{32x^4+64x^2+32}-\frac{5x}{32x^4+64x^2+32}-\frac{5\operatorname{acot}(x)}{32x^4+64x^2+32}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*acot(x)/(x**2+1)**3,x)
```

```
[Out] 3*x**4*acot(x)/(32*x**4 + 64*x**2 + 32) - 3*x**3/(32*x**4 + 64*x**2 + 32) +
 6*x**2*acot(x)/(32*x**4 + 64*x**2 + 32) - 5*x/(32*x**4 + 64*x**2 + 32) - 5
*acot(x)/(32*x**4 + 64*x**2 + 32)
```

3.72 $\int \frac{\cot^{-1}(x)}{\left(1+x^2\right)^2} \, dx$

Optimal. Leaf size=34

$$-\frac{1}{4\left(x^2+1\right)}+\frac{x\cot^{-1}(x)}{2\left(x^2+1\right)}-\frac{1}{4}\cot^{-1}(x)^2$$

```
[Out] -1/4/(x^2+1)+1/2*x*arccot(x)/(x^2+1)-1/4*arccot(x)^2
```

Rubi [A] time = 0.01, antiderivative size = 34, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {4893, 261}

$$-\frac{1}{4\left(x^2+1\right)}+\frac{x\cot^{-1}(x)}{2\left(x^2+1\right)}-\frac{1}{4}\cot^{-1}(x)^2$$

Antiderivative was successfully verified.

```
[In] Int[ArcCot[x]/(1 + x^2)^2,x]
```

```
[Out] -1/(4*(1 + x^2)) + (x*ArcCot[x])/(2*(1 + x^2)) - ArcCot[x]^2/4
```

Rule 261

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

Rule 4893

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)^2)^2, x_Sym
bol] :> Simp[(x*(a + b*ArcCot[c*x])^p)/(2*d*(d + e*x^2)), x] + (Dist[(b*c*p
)/2, Int[(x*(a + b*ArcCot[c*x])^(p - 1))/(d + e*x^2)^2, x], x] - Simp[(a +
b*ArcCot[c*x])^(p + 1)/(2*b*c*d^2*(p + 1)), x]) /; FreeQ[{a, b, c, d, e}, x
] && EqQ[e, c^2*d] && GtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{\cot^{-1}(x)}{\left(1+x^2\right)^2} \, dx &= \frac{x\cot^{-1}(x)}{2\left(1+x^2\right)}-\frac{1}{4}\cot^{-1}(x)^2+\frac{1}{2}\int \frac{x}{\left(1+x^2\right)^2} \, dx\\ &= -\frac{1}{4\left(1+x^2\right)}+\frac{x\cot^{-1}(x)}{2\left(1+x^2\right)}-\frac{1}{4}\cot^{-1}(x)^2\end{aligned}$$

Mathematica [A] time = 0.02, size = 28, normalized size = 0.82

$$-\frac{\left(x^2+1\right)\cot^{-1}(x)^2-2x\cot^{-1}(x)+1}{4\left(x^2+1\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcCot[x]/(1 + x^2)^2,x]
```

```
[Out] -1/4*(1 - 2*x*ArcCot[x] + (1 + x^2)*ArcCot[x]^2)/(1 + x^2)
```

fricas [A] time = 1.34, size = 26, normalized size = 0.76

$$-\frac{\left(x^2+1\right)\operatorname{arccot}(x)^2-2\,x\operatorname{arccot}(x)+1}{4\left(x^2+1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(x)/(x^2+1)^2,x, algorithm="fricas")
```

```
[Out] -1/4*((x^2 + 1)*arccot(x)^2 - 2*x*arccot(x) + 1)/(x^2 + 1)
```

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

$$\int \frac{\operatorname{arccot}(x)}{\left(x^2+1\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(x)/(x^2+1)^2,x, algorithm="giac")
```

```
[Out] integrate(arccot(x)/(x^2 + 1)^2, x)
```

maple [A] time = 0.05, size = 35, normalized size = 1.03

$$\frac{x\operatorname{arccot}(x)}{2x^2+2}+\frac{\operatorname{arccot}(x)\arctan(x)}{2}-\frac{1}{4\left(x^2+1\right)}+\frac{\arctan(x)^2}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arccot(x)/(x^2+1)^2,x)
```

```
[Out] 1/2*x*arccot(x)/(x^2+1)+1/2*arccot(x)*arctan(x)-1/4/(x^2+1)+1/4*arctan(x)^2
```

maxima [A] time = 0.42, size = 38, normalized size = 1.12

$$\frac{1}{2}\left(\frac{x}{x^2+1}+\arctan(x)\right)\operatorname{arccot}(x)+\frac{\left(x^2+1\right)\arctan(x)^2-1}{4\left(x^2+1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(x)/(x^2+1)^2,x, algorithm="maxima")
```

```
[Out] 1/2*(x/(x^2 + 1) + arctan(x))*arccot(x) + 1/4*((x^2 + 1)*arctan(x)^2 - 1)/(
x^2 + 1)
```

mupad [B] time = 0.61, size = 22, normalized size = 0.65

$$\frac{\frac{x\operatorname{acot}(x)}{2}-\frac{1}{4}}{x^2+1}-\frac{\operatorname{acot}(x)^2}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(acot(x)/(x^2 + 1)^2,x)
```

```
[Out] ((x*acot(x))/2 - 1/4)/(x^2 + 1) - acot(x)^2/4
```

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

Exception raised: RecursionError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(acot(x)/(x**2+1)**2,x)
```

```
[Out] Exception raised: RecursionError
```

3.73 $\int \frac{\cot^{-1}(x)^2}{\left(1+x^2\right)^2}\,dx$

Optimal. Leaf size=56

$$-\frac{x}{4\left(x^2+1\right)}+\frac{x\cot^{-1}(x)^2}{2\left(x^2+1\right)}-\frac{\cot^{-1}(x)}{2\left(x^2+1\right)}-\frac{1}{4}\tan^{-1}(x)-\frac{1}{6}\cot^{-1}(x)^3$$

```
[Out] -1/4*x/(x^2+1)-1/2*arccot(x)/(x^2+1)+1/2*x*arccot(x)^2/(x^2+1)-1/6*arccot(x
)^3-1/4*arctan(x)
```

Rubi [A] time = 0.04, antiderivative size = 56, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333, Rules used = {4893, 4931, 199, 203}

$$-\frac{x}{4\left(x^2+1\right)}+\frac{x\cot^{-1}(x)^2}{2\left(x^2+1\right)}-\frac{\cot^{-1}(x)}{2\left(x^2+1\right)}-\frac{1}{4}\tan^{-1}(x)-\frac{1}{6}\cot^{-1}(x)^3$$

Antiderivative was successfully verified.

```
[In] Int[ArcCot[x]^2/(1 + x^2)^2,x]
```

```
[Out] -x/(4*(1 + x^2)) - ArcCot[x]/(2*(1 + x^2)) + (x*ArcCot[x]^2)/(2*(1 + x^2))
- ArcCot[x]^3/6 - ArcTan[x]/4
```

Rule 199

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> -Simp[(x*(a + b*x^n)^(p + 1
))/(a*n*(p + 1)), x] + Dist[(n*(p + 1) + 1)/(a*n*(p + 1)), Int[(a + b*x^n)^
(p + 1), x], x] /; FreeQ[{a, b}, x] && IGtQ[n, 0] && LtQ[p, -1] && (Integer
Q[2*p] || (n == 2 && IntegerQ[4*p]) || (n == 2 && IntegerQ[3*p]) || Denomin
ator[p + 1/n] < Denominator[p])
```

Rule 203

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

Rule 4893

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)^2)^2, x_Sym
bol] :> Simp[(x*(a + b*ArcCot[c*x])^p)/(2*d*(d + e*x^2)), x] + (Dist[(b*c*p
)/2, Int[(x*(a + b*ArcCot[c*x])^(p - 1))/(d + e*x^2)^2, x], x] - Simp[(a +
b*ArcCot[c*x])^(p + 1)/(2*b*c*d^2*(p + 1)), x]) /; FreeQ[{a, b, c, d, e}, x
] && EqQ[e, c^2*d] && GtQ[p, 0]
```

Rule 4931

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)*(x_)*((d_) + (e_.)*(x_)^2)^(q_
.), x_Symbol] :> Simp[((d + e*x^2)^(q + 1)*(a + b*ArcCot[c*x])^p)/(2*e*(q +
 1)), x] + Dist[(b*p)/(2*c*(q + 1)), Int[(d + e*x^2)^q*(a + b*ArcCot[c*x])^
(p - 1), x], x] /; FreeQ[{a, b, c, d, e, q}, x] && EqQ[e, c^2*d] && GtQ[p,
0] && NeQ[q, -1]
```

Rubi steps

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

Mathematica [A] time = 0.03, size = 46, normalized size = 0.82

$$-\frac{3\left(\left(x^2+1\right)\tan^{-1}(x)+x\right)+2\left(x^2+1\right)\cot^{-1}(x)^3-6x\cot^{-1}(x)^2+6\cot^{-1}(x)}{12\left(x^2+1\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcCot[x]^2/(1 + x^2)^2,x]
```

```
[Out] -1/12*(6*ArcCot[x] - 6*x*ArcCot[x]^2 + 2*(1 + x^2)*ArcCot[x]^3 + 3*(x + (1
+ x^2)*ArcTan[x]))/(1 + x^2)
```

fricas [A] time = 0.65, size = 40, normalized size = 0.71

$$-\frac{2\left(x^2+1\right)\operatorname{arccot}(x)^3-6\,x\operatorname{arccot}(x)^2-3\left(x^2-1\right)\operatorname{arccot}(x)+3\,x}{12\left(x^2+1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(x)^2/(x^2+1)^2,x, algorithm="fricas")
```

```
[Out] -1/12*(2*(x^2 + 1)*arccot(x)^3 - 6*x*arccot(x)^2 - 3*(x^2 - 1)*arccot(x) +
3*x)/(x^2 + 1)
```

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

$$\int \frac{\operatorname{arccot}(x)^2}{\left(x^2+1\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(x)^2/(x^2+1)^2,x, algorithm="giac")
```

```
[Out] integrate(arccot(x)^2/(x^2 + 1)^2, x)
```

maple [A] time = 0.35, size = 61, normalized size = 1.09

$$-\frac{\operatorname{arccot}(x)^2\left(x^2\operatorname{arccot}(x)+\operatorname{arccot}(x)-x\right)}{2\left(x^2+1\right)}+\frac{x^2\operatorname{arccot}(x)}{2x^2+2}-\frac{x}{4\left(x^2+1\right)}-\frac{\operatorname{arccot}(x)}{4}+\frac{\operatorname{arccot}(x)^3}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arccot(x)^2/(x^2+1)^2,x)
```

```
[Out] -1/2*arccot(x)^2*(x^2*arccot(x)+arccot(x)-x)/(x^2+1)+1/2*x^2*arccot(x)/(x^2
+1)-1/4*x/(x^2+1)-1/4*arccot(x)+1/3*arccot(x)^3
```

maxima [A] time = 0.43, size = 75, normalized size = 1.34

$$\frac{1}{2}\left(\frac{x}{x^2+1}+\arctan(x)\right)\operatorname{arccot}(x)^2+\frac{\left(\left(x^2+1\right)\arctan(x)^2-1\right)\operatorname{arccot}(x)}{2\left(x^2+1\right)}+\frac{2\left(x^2+1\right)\arctan(x)^3-3\left(x^2+1\right)\operatorname{arcta}}{12\left(x^2+1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(x)^2/(x^2+1)^2,x, algorithm="maxima")
```

```
[Out] 1/2*(x/(x^2 + 1) + arctan(x))*arccot(x)^2 + 1/2*((x^2 + 1)*arctan(x)^2 - 1)
*arccot(x)/(x^2 + 1) + 1/12*(2*(x^2 + 1)*arctan(x)^3 - 3*(x^2 + 1)*arctan(x
) - 3*x)/(x^2 + 1)
```

mupad [B] time = 0.06, size = 51, normalized size = 0.91

$$\frac{x\,\mathrm{acot}(x)^2}{2\left(x^2+1\right)}-\frac{\mathrm{acot}(x)^3}{6}-\frac{x}{4\left(x^2+1\right)}-\frac{\mathrm{acot}(x)}{2\left(x^2+1\right)}-\frac{\mathrm{atan}(x)}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(acot(x)^2/(x^2 + 1)^2,x)
```

```
[Out] (x*acot(x)^2)/(2*(x^2 + 1)) - acot(x)^3/6 - x/(4*(x^2 + 1)) - acot(x)/(2*(x
^2 + 1)) - atan(x)/4
```

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

$$\int \frac{\operatorname{acot}^2(x)}{\left(x^2+1\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(acot(x)**2/(x**2+1)**2,x)
```

```
[Out] Integral(acot(x)**2/(x**2 + 1)**2, x)
```

3.74 $\int x^5 \cot^{-1}(ax^2)\, dx$

Optimal. Leaf size=41

$$-\frac{\log\left(a^2x^4+1\right)}{12a^3}+\frac{x^4}{12a}+\frac{1}{6}x^6\cot^{-1}\left(ax^2\right)$$

```
[Out] 1/12*x^4/a+1/6*x^6*arccot(a*x^2)-1/12*ln(a^2*x^4+1)/a^3
```

Rubi [A] time = 0.03, antiderivative size = 41, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.300, Rules used = {5034, 266, 43}

$$-\frac{\log\left(a^2x^4+1\right)}{12a^3}+\frac{x^4}{12a}+\frac{1}{6}x^6\cot^{-1}\left(ax^2\right)$$

Antiderivative was successfully verified.

```
[In] Int[x^5*ArcCot[a*x^2],x]
```

```
[Out] x^4/(12*a) + (x^6*ArcCot[a*x^2])/6 - Log[1 + a^2*x^4]/(12*a^3)
```

Rule 43

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

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 5034

```
Int[((a_.) + ArcCot[(c_.)*(x_)^(n_)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :
> Simp[((d*x)^(m + 1)*(a + b*ArcCot[c*x^n]))/(d*(m + 1)), x] + Dist[(b*c*n)
/(d*(m + 1)), Int[(x^(n - 1)*(d*x)^(m + 1))/(1 + c^2*x^(2*n)), x], x] /; Fr
eeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rubi steps

$$\begin{aligned}
\int x^5 \cot^{-1}\left(ax^2\right) dx &= \frac{1}{6}x^6\cot^{-1}\left(ax^2\right)+\frac{1}{3}a\int \frac{x^7}{1+a^2x^4}\, dx\\
&= \frac{1}{6}x^6\cot^{-1}\left(ax^2\right)+\frac{1}{12}a\,\text{Subst}\left(\int \frac{x}{1+a^2x}\, dx, x, x^4\right)\\
&= \frac{1}{6}x^6\cot^{-1}\left(ax^2\right)+\frac{1}{12}a\,\text{Subst}\left(\int \left(\frac{1}{a^2}-\frac{1}{a^2\left(1+a^2x\right)}\right) dx, x, x^4\right)\\
&= \frac{x^4}{12a}+\frac{1}{6}x^6\cot^{-1}\left(ax^2\right)-\frac{\log\left(1+a^2x^4\right)}{12a^3}
\end{aligned}$$

Mathematica [A] time = 0.02, size = 41, normalized size = 1.00

$$-\frac{\log\left(a^2x^4+1\right)}{12a^3}+\frac{x^4}{12a}+\frac{1}{6}x^6\cot^{-1}\left(ax^2\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[x^5*ArcCot[a*x^2],x]
[Out] x^4/(12*a) + (x^6*ArcCot[a*x^2])/6 - Log[1 + a^2*x^4]/(12*a^3)
```

fricas [A] time = 1.56, size = 39, normalized size = 0.95

$$\frac{2\,a^{3}x^{6}\,\mathrm{arccot}\left(ax^{2}\right)+a^{2}x^{4}-\log\left(a^{2}x^{4}+1\right)}{12\,a^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*arccot(a*x^2),x, algorithm="fricas")
[Out] 1/12*(2*a^3*x^6*arccot(a*x^2) + a^2*x^4 - log(a^2*x^4 + 1))/a^3
```

giac [A] time = 0.13, size = 40, normalized size = 0.98

$$\frac{1}{6}\,x^{6}\arctan\left(\frac{1}{ax^{2}}\right)+\frac{1}{12}\left(\frac{x^{4}}{a^{2}}-\frac{\log\left(a^{2}x^{4}+1\right)}{a^{4}}\right)a$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*arccot(a*x^2),x, algorithm="giac")
[Out] 1/6*x^6*arctan(1/(a*x^2)) + 1/12*(x^4/a^2 - log(a^2*x^4 + 1)/a^4)*a
```

maple [A] time = 0.04, size = 36, normalized size = 0.88

$$\frac{x^{4}}{12a}+\frac{x^{6}\mathrm{arccot}\left(a\,x^{2}\right)}{6}-\frac{\ln\left(a^{2}x^{4}+1\right)}{12a^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^5*arccot(a*x^2),x)
[Out] 1/12*x^4/a+1/6*x^6*arccot(a*x^2)-1/12*ln(a^2*x^4+1)/a^3
```

maxima [A] time = 0.32, size = 38, normalized size = 0.93

$$\frac{1}{6}\,x^{6}\,\mathrm{arccot}\left(ax^{2}\right)+\frac{1}{12}\left(\frac{x^{4}}{a^{2}}-\frac{\log\left(a^{2}x^{4}+1\right)}{a^{4}}\right)a$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*arccot(a*x^2),x, algorithm="maxima")
[Out] 1/6*x^6*arccot(a*x^2) + 1/12*(x^4/a^2 - log(a^2*x^4 + 1)/a^4)*a
```

mupad [B] time = 0.65, size = 35, normalized size = 0.85

$$\frac{x^{6}\,\mathrm{acot}\left(a\,x^{2}\right)}{6}-\frac{\ln\left(a^{2}\,x^{4}+1\right)}{12\,a^{3}}+\frac{x^{4}}{12\,a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^5*acot(a*x^2),x)
[Out] (x^6*acot(a*x^2))/6 - log(a^2*x^4 + 1)/(12*a^3) + x^4/(12*a)
```

sympy [A] time = 1.78, size = 39, normalized size = 0.95

$$\begin{cases} \frac{x^{6}\operatorname{acot}\left(ax^{2}\right)}{6}+\frac{x^{4}}{12a}-\frac{\log\left(a^{2}x^{4}+1\right)}{12a^{3}} & \text{for } a\neq 0\\ \frac{\pi x^{6}}{12} & \text{otherwise}\end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**5*acot(a*x**2),x)
```

```
[Out] Piecewise((x**6*acot(a*x**2)/6 + x**4/(12*a) - log(a**2*x**4 + 1)/(12*a**3)
, Ne(a, 0)), (pi*x**6/12, True))
```

3.75 $\int x^3 \cot^{-1}\left(ax^2\right) dx$

Optimal. Leaf size=37

$$-\frac{\tan^{-1}\left(ax^2\right)}{4a^2}+\frac{x^2}{4a}+\frac{1}{4}x^4\cot^{-1}\left(ax^2\right)$$

```
[Out] 1/4*x^2/a+1/4*x^4*arccot(a*x^2)-1/4*arctan(a*x^2)/a^2
```

Rubi [A] time = 0.02, antiderivative size = 37, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.400, Rules used = {5034, 275, 321, 203}

$$-\frac{\tan^{-1}\left(ax^2\right)}{4a^2}+\frac{x^2}{4a}+\frac{1}{4}x^4\cot^{-1}\left(ax^2\right)$$

Antiderivative was successfully verified.

```
[In] Int[x^3*ArcCot[a*x^2],x]
```

```
[Out] x^2/(4*a) + (x^4*ArcCot[a*x^2])/4 - ArcTan[a*x^2]/(4*a^2)
```

Rule 203

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

Rule 275

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

Rule 321

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

Rule 5034

```
Int[((a_.) + ArcCot[(c_.)*(x_)^(n_)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :
> Simp[((d*x)^(m + 1)*(a + b*ArcCot[c*x^n]))/(d*(m + 1)), x] + Dist[(b*c*n)
/(d*(m + 1)), Int[(x^(n - 1)*(d*x)^(m + 1))/(1 + c^2*x^(2*n)), x], x] /; Fr
eeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rubi steps

$$\begin{aligned}\int x^3 \cot^{-1}\left(ax^2\right) dx &= \frac{1}{4}x^4 \cot^{-1}\left(ax^2\right) + \frac{1}{2}a \int \frac{x^5}{1+a^2x^4} dx \\ &= \frac{1}{4}x^4 \cot^{-1}\left(ax^2\right) + \frac{1}{4}a \operatorname{Subst}\left(\int \frac{x^2}{1+a^2x^2} dx, x, x^2\right) \\ &= \frac{x^2}{4a} + \frac{1}{4}x^4 \cot^{-1}\left(ax^2\right) - \frac{\operatorname{Subst}\left(\int \frac{1}{1+a^2x^2} dx, x, x^2\right)}{4a} \\ &= \frac{x^2}{4a} + \frac{1}{4}x^4 \cot^{-1}\left(ax^2\right) - \frac{\tan^{-1}\left(ax^2\right)}{4a^2}\end{aligned}$$

Mathematica [A] time = 0.01, size = 37, normalized size = 1.00

$$-\frac{\tan^{-1}\left(ax^2\right)}{4a^2} + \frac{x^2}{4a} + \frac{1}{4}x^4 \cot^{-1}\left(ax^2\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[x^3*ArcCot[a*x^2],x]
[Out] x^2/(4*a) + (x^4*ArcCot[a*x^2])/4 - ArcTan[a*x^2]/(4*a^2)
```

fricas [A] time = 0.74, size = 27, normalized size = 0.73

$$\frac{ax^2 + \left(a^2x^4 + 1\right) \operatorname{arccot}\left(ax^2\right)}{4\,a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*arccot(a*x^2),x, algorithm="fricas")
[Out] 1/4*(a*x^2 + (a^2*x^4 + 1)*arccot(a*x^2))/a^2
```

giac [A] time = 0.11, size = 38, normalized size = 1.03

$$\frac{1}{4}\left(\frac{x^4 \arctan\left(\frac{1}{ax^2}\right)}{a} + \frac{x^2}{a^2} + \frac{\arctan\left(\frac{1}{ax^2}\right)}{a^3}\right)a$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*arccot(a*x^2),x, algorithm="giac")
[Out] 1/4*(x^4*arctan(1/(a*x^2))/a + x^2/a^2 + arctan(1/(a*x^2))/a^3)*a
```

maple [A] time = 0.04, size = 32, normalized size = 0.86

$$\frac{x^2}{4a} + \frac{x^4 \operatorname{arccot}\left(a\,x^2\right)}{4} - \frac{\arctan\left(a\,x^2\right)}{4a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*arccot(a*x^2),x)
[Out] 1/4*x^2/a+1/4*x^4*arccot(a*x^2)-1/4*arctan(a*x^2)/a^2
```

maxima [A] time = 0.42, size = 34, normalized size = 0.92

$$\frac{1}{4}\,x^4 \operatorname{arccot}\left(ax^2\right) + \frac{1}{4}\,a\left(\frac{x^2}{a^2} - \frac{\arctan\left(ax^2\right)}{a^3}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*arccot(a*x^2),x, algorithm="maxima")
```

```
[Out] 1/4*x^4*arccot(a*x^2) + 1/4*a*(x^2/a^2 - arctan(a*x^2)/a^3)
```

mupad [B] time = 0.61, size = 31, normalized size = 0.84

$$\frac{x^4\,\mathrm{acot}\left(a\,x^2\right)}{4}-\frac{\mathrm{atan}\left(a\,x^2\right)}{4\,a^2}+\frac{x^2}{4\,a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*acot(a*x^2),x)
```

```
[Out] (x^4*acot(a*x^2))/4 - atan(a*x^2)/(4*a^2) + x^2/(4*a)
```

sympy [A] time = 1.03, size = 36, normalized size = 0.97

$$\begin{cases} \frac{x^4\,\mathrm{acot}\left(ax^2\right)}{4}+\frac{x^2}{4a}+\frac{\mathrm{acot}\left(ax^2\right)}{4a^2} & \text{for } a\neq 0 \\ \frac{\pi x^4}{8} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*acot(a*x**2),x)
```

```
[Out] Piecewise((x**4*acot(a*x**2)/4 + x**2/(4*a) + acot(a*x**2)/(4*a**2), Ne(a,
0)), (pi*x**4/8, True))
```

3.76 $\int x \cot^{-1}\left(ax^2\right) dx$

Optimal. Leaf size=31

$$\frac{\log\left(a^2x^4+1\right)}{4a}+\frac{1}{2}x^2\cot^{-1}\left(ax^2\right)$$

```
[Out] 1/2*x^2*arccot(a*x^2)+1/4*ln(a^2*x^4+1)/a
```

Rubi [A] time = 0.01, antiderivative size = 31, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 8, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {5034, 260}

$$\frac{\log\left(a^2x^4+1\right)}{4a}+\frac{1}{2}x^2\cot^{-1}\left(ax^2\right)$$

Antiderivative was successfully verified.

```
[In] Int[x*ArcCot[a*x^2],x]
[Out] (x^2*ArcCot[a*x^2])/2 + Log[1 + a^2*x^4]/(4*a)
```

Rule 260

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

Rule 5034

```
Int[((a_.) + ArcCot[(c_.)*(x_)^(n_)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :
> Simp[((d*x)^(m + 1)*(a + b*ArcCot[c*x^n]))/(d*(m + 1)), x] + Dist[(b*c*n)
/(d*(m + 1)), Int[(x^(n - 1)*(d*x)^(m + 1))/(1 + c^2*x^(2*n)), x], x] /; Fr
eeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rubi steps

$$\begin{aligned}\int x\cot^{-1}\left(ax^2\right)dx&=\frac{1}{2}x^2\cot^{-1}\left(ax^2\right)+a\int\frac{x^3}{1+a^2x^4}\,dx\\&=\frac{1}{2}x^2\cot^{-1}\left(ax^2\right)+\frac{\log\left(1+a^2x^4\right)}{4a}\end{aligned}$$

Mathematica [A] time = 0.01, size = 31, normalized size = 1.00

$$\frac{\log\left(a^2x^4+1\right)}{4a}+\frac{1}{2}x^2\cot^{-1}\left(ax^2\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[x*ArcCot[a*x^2],x]
[Out] (x^2*ArcCot[a*x^2])/2 + Log[1 + a^2*x^4]/(4*a)
```

fricas [A] time = 0.98, size = 28, normalized size = 0.90

$$\frac{2\,ax^2\operatorname{arccot}\left(ax^2\right)+\log\left(a^2x^4+1\right)}{4\,a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*arccot(a*x^2),x, algorithm="fricas")
```

```
[Out] 1/4*(2*a*x^2*arccot(a*x^2) + log(a^2*x^4 + 1))/a
```

giac [A] time = 0.13, size = 47, normalized size = 1.52

$$\frac{1}{4}\left(\frac{2\,x^2\arctan\left(\frac{1}{ax^2}\right)}{a}+\frac{\log\left(\frac{1}{a^2x^4}+1\right)}{a^2}-\frac{\log\left(\frac{1}{a^2x^4}\right)}{a^2}\right)a$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*arccot(a*x^2),x, algorithm="giac")
```

```
[Out] 1/4*(2*x^2*arctan(1/(a*x^2))/a + log(1/(a^2*x^4) + 1)/a^2 - log(1/(a^2*x^4)
)/a^2)*a
```

maple [A] time = 0.04, size = 28, normalized size = 0.90

$$\frac{x^2\mathrm{arccot}\left(a\,x^2\right)}{2}+\frac{\ln\left(a^2x^4+1\right)}{4a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*arccot(a*x^2),x)
```

```
[Out] 1/2*x^2*arccot(a*x^2)+1/4*ln(a^2*x^4+1)/a
```

maxima [A] time = 0.32, size = 28, normalized size = 0.90

$$\frac{2\,ax^2\,\mathrm{arccot}\left(ax^2\right)+\log\left(a^2x^4+1\right)}{4\,a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*arccot(a*x^2),x, algorithm="maxima")
```

```
[Out] 1/4*(2*a*x^2*arccot(a*x^2) + log(a^2*x^4 + 1))/a
```

mupad [B] time = 0.60, size = 27, normalized size = 0.87

$$\frac{x^2\,\mathrm{acot}\left(a\,x^2\right)}{2}+\frac{\ln\left(a^2\,x^4+1\right)}{4\,a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*acot(a*x^2),x)
```

```
[Out] (x^2*acot(a*x^2))/2 + log(a^2*x^4 + 1)/(4*a)
```

sympy [A] time = 0.58, size = 31, normalized size = 1.00

$$\begin{cases} \frac{x^2\,\mathrm{acot}\left(ax^2\right)}{2}+\frac{\log\left(a^2x^4+1\right)}{4a} & \text{for } a\neq 0\\ \frac{\pi x^2}{4} & \text{otherwise}\end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*acot(a*x**2),x)
```

```
[Out] Piecewise((x**2*acot(a*x**2)/2 + log(a**2*x**4 + 1)/(4*a), Ne(a, 0)), (pi*x
**2/4, True))
```

3.77 $\int \frac{\cot^{-1}(ax^2)}{x}\,dx$

Optimal. Leaf size=37

$$\frac{1}{4}i\text{Li}_2\left(\frac{i}{ax^2}\right)-\frac{1}{4}i\text{Li}_2\left(-\frac{i}{ax^2}\right)$$

```
[Out] -1/4*I*polylog(2,-I/a/x^2)+1/4*I*polylog(2,I/a/x^2)
```

Rubi [A] time = 0.03, antiderivative size = 37, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.300, Rules used = {5032, 4849, 2391}

$$\frac{1}{4}i\text{PolyLog}\left(2,\frac{i}{ax^2}\right)-\frac{1}{4}i\text{PolyLog}\left(2,-\frac{i}{ax^2}\right)$$

Antiderivative was successfully verified.

```
[In] Int[ArcCot[a*x^2]/x,x]
```

```
[Out] (-I/4)*PolyLog[2, (-I)/(a*x^2)] + (I/4)*PolyLog[2, I/(a*x^2)]
```

Rule 2391

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

Rule 4849

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))/(x_), x_Symbol] :> Simp[a*Log[x], x]
 + (Dist[(I*b)/2, Int[Log[1 - I/(c*x)]/x, x], x] - Dist[(I*b)/2, Int[Log[1
+ I/(c*x)]/x, x], x]) /; FreeQ[{a, b, c}, x]
```

Rule 5032

```
Int[((a_.) + ArcCot[(c_.)*(x_)^(n_)]*(b_.))^(p_.)/(x_), x_Symbol] :> Dist[1
/n, Subst[Int[(a + b*ArcCot[c*x])^p/x, x], x, x^n], x] /; FreeQ[{a, b, c, n
}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{\cot^{-1}\left(ax^2\right)}{x}\,dx &= \frac{1}{2}\text{Subst}\left(\int \frac{\cot^{-1}(ax)}{x}\,dx,x,x^2\right)\\
&= \frac{1}{4}i\,\text{Subst}\left(\int \frac{\log\left(1-\frac{i}{ax}\right)}{x}\,dx,x,x^2\right)-\frac{1}{4}i\,\text{Subst}\left(\int \frac{\log\left(1+\frac{i}{ax}\right)}{x}\,dx,x,x^2\right)\\
&= -\frac{1}{4}i\text{Li}_2\left(-\frac{i}{ax^2}\right)+\frac{1}{4}i\text{Li}_2\left(\frac{i}{ax^2}\right)
\end{aligned}$$

Mathematica [A] time = 0.01, size = 37, normalized size = 1.00

$$\frac{1}{4}i\text{Li}_2\left(\frac{i}{ax^2}\right)-\frac{1}{4}i\text{Li}_2\left(-\frac{i}{ax^2}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcCot[a*x^2]/x,x]
[Out] (-1/4*I)*PolyLog[2, (-I)/(a*x^2)] + (I/4)*PolyLog[2, I/(a*x^2)]
```

fricas [F] time = 0.61, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\operatorname{arccot}\left(ax^2\right)}{x}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(a*x^2)/x,x, algorithm="fricas")
[Out] integral(arccot(a*x^2)/x, x)
```

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

$$\int \frac{\operatorname{arccot}\left(ax^2\right)}{x}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(a*x^2)/x,x, algorithm="giac")
[Out] integrate(arccot(a*x^2)/x, x)
```

maple [C] time = 0.16, size = 57, normalized size = 1.54

$$\ln(x)\operatorname{arccot}\left(a\,x^2\right) + \frac{\sum_{\_R1=\operatorname{RootOf}\left(a^2\_Z^4+1\right)} \frac{\ln(x)\ln\left(\frac{\_R1-x}{\_R1}\right)+\operatorname{dilog}\left(\frac{\_R1-x}{\_R1}\right)}{\_R1^2}}{2a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arccot(a*x^2)/x,x)
[Out] ln(x)*arccot(a*x^2)+1/2/a*sum(1/_R1^2*(ln(x)*ln((_R1-x)/_R1)+dilog((_R1-x)/
_R1)),_R1=RootOf(_Z^4*a^2+1))
```

maxima [B] time = 0.48, size = 68, normalized size = 1.84

$$\frac{1}{8}\pi\log\left(a^2x^4+1\right)-\frac{1}{2}\arctan\left(ax^2\right)\log\left(ax^2\right)+\operatorname{arccot}\left(ax^2\right)\log(x)+\arctan\left(ax^2\right)\log(x)+\frac{1}{4}i\operatorname{Li}_2\left(i\,ax^2+1\right)-\frac{1}{4}i\operatorname{Li}_2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(a*x^2)/x,x, algorithm="maxima")
[Out] 1/8*pi*log(a^2*x^4 + 1) - 1/2*arctan(a*x^2)*log(a*x^2) + arccot(a*x^2)*log(
x) + arctan(a*x^2)*log(x) + 1/4*I*dilog(I*a*x^2 + 1) - 1/4*I*dilog(-I*a*x^2
 + 1)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\operatorname{acot}\left(a\,x^2\right)}{x}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(acot(a*x^2)/x,x)
[Out] int(acot(a*x^2)/x, x)
```

<u>**sympy**</u> **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{acot}\left(ax^2\right)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(acot(a*x**2)/x,x)
```

```
[Out] Integral(acot(a*x**2)/x, x)
```

3.78 $\int \frac{\cot^{-1}(ax^2)}{x^3} \, dx$

Optimal. Leaf size=34

$$\frac{1}{4} a \log \left(a^2 x^4+1\right)-\frac{\cot^{-1}\left(a x^2\right)}{2 x^2}-a \log (x)$$

```
[Out] -1/2*arccot(a*x^2)/x^2-a*ln(x)+1/4*a*ln(a^2*x^4+1)
```

Rubi [A] time = 0.02, antiderivative size = 34, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.500, Rules used = {5034, 266, 36, 29, 31}

$$\frac{1}{4} a \log \left(a^2 x^4+1\right)-\frac{\cot^{-1}\left(a x^2\right)}{2 x^2}-a \log (x)$$

Antiderivative was successfully verified.

```
[In] Int[ArcCot[a*x^2]/x^3,x]
```

```
[Out] -ArcCot[a*x^2]/(2*x^2) - a*Log[x] + (a*Log[1 + a^2*x^4])/4
```

Rule 29

```
Int[(x_)^(-1), x_Symbol] :> Simp[Log[x], x]
```

Rule 31

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

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x], x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 5034

```
Int[((a_.) + ArcCot[(c_.)*(x_)^(n_)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :> Simp[((d*x)^(m + 1)*(a + b*ArcCot[c*x^n]))/(d*(m + 1)), x] + Dist[(b*c*n)/(d*(m + 1)), Int[(x^(n - 1)*(d*x)^(m + 1))/(1 + c^2*x^(2*n)), x], x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rubi steps

$$\int \frac{\cot^{-1}\left(ax^2\right)}{x^3} dx = -\frac{\cot^{-1}\left(ax^2\right)}{2x^2} - a\int \frac{1}{x\left(1+a^2x^4\right)} dx$$
$$= -\frac{\cot^{-1}\left(ax^2\right)}{2x^2} - \frac{1}{4}a\,\text{Subst}\left(\int \frac{1}{x\left(1+a^2x\right)} dx, x, x^4\right)$$
$$= -\frac{\cot^{-1}\left(ax^2\right)}{2x^2} - \frac{1}{4}a\,\text{Subst}\left(\int \frac{1}{x} dx, x, x^4\right) + \frac{1}{4}a^3\,\text{Subst}\left(\int \frac{1}{1+a^2x} dx, x, x^4\right)$$
$$= -\frac{\cot^{-1}\left(ax^2\right)}{2x^2} - a\log(x) + \frac{1}{4}a\log\left(1+a^2x^4\right)$$

Mathematica [A] time = 0.01, size = 34, normalized size = 1.00

$$\frac{1}{4}a\log\left(a^2x^4+1\right) - \frac{\cot^{-1}\left(ax^2\right)}{2x^2} - a\log(x)$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcCot[a*x^2]/x^3,x]
[Out] -1/2*ArcCot[a*x^2]/x^2 - a*Log[x] + (a*Log[1 + a^2*x^4])/4
```

fricas [A] time = 0.68, size = 37, normalized size = 1.09

$$\frac{ax^2\log\left(a^2x^4+1\right) - 4\,ax^2\log(x) - 2\,\operatorname{arccot}\left(ax^2\right)}{4\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(a*x^2)/x^3,x, algorithm="fricas")
[Out] 1/4*(a*x^2*log(a^2*x^4 + 1) - 4*a*x^2*log(x) - 2*arccot(a*x^2))/x^2
```

giac [A] time = 0.12, size = 34, normalized size = 1.00

$$\frac{1}{4}a\left(\log\left(a^2x^4+1\right) - \log\left(x^4\right)\right) - \frac{\arctan\left(\frac{1}{ax^2}\right)}{2\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(a*x^2)/x^3,x, algorithm="giac")
[Out] 1/4*a*(log(a^2*x^4 + 1) - log(x^4)) - 1/2*arctan(1/(a*x^2))/x^2
```

maple [A] time = 0.04, size = 31, normalized size = 0.91

$$-\frac{\operatorname{arccot}\left(a\,x^2\right)}{2x^2} - a\ln(x) + \frac{a\ln\left(a^2x^4+1\right)}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arccot(a*x^2)/x^3,x)
[Out] -1/2*arccot(a*x^2)/x^2-a*ln(x)+1/4*a*ln(a^2*x^4+1)
```

maxima [A] time = 0.32, size = 32, normalized size = 0.94

$$\frac{1}{4}a\left(\log\left(a^2x^4+1\right) - \log\left(x^4\right)\right) - \frac{\operatorname{arccot}\left(ax^2\right)}{2\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(a*x^2)/x^3,x, algorithm="maxima")
```

```
[Out] 1/4*a*(log(a^2*x^4 + 1) - log(x^4)) - 1/2*arccot(a*x^2)/x^2
```

mupad [B] time = 0.66, size = 31, normalized size = 0.91

$$\frac{a\ \ln\left(-a^2\,x^4-1\right)}{4}-\frac{\operatorname{acot}\left(a\,x^2\right)}{2\,x^2}-a\ \ln(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(acot(a*x^2)/x^3,x)
```

```
[Out] (a*log(- a^2*x^4 - 1))/4 - acot(a*x^2)/(2*x^2) - a*log(x)
```

sympy [A] time = 0.70, size = 29, normalized size = 0.85

$$-a\log{(x)}+\frac{a\log{\left(a^2x^4+1\right)}}{4}-\frac{\operatorname{acot}{\left(ax^2\right)}}{2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(acot(a*x**2)/x**3,x)
```

```
[Out] -a*log(x) + a*log(a**2*x**4 + 1)/4 - acot(a*x**2)/(2*x**2)
```

3.79 $\int \frac{\cot^{-1}(ax^2)}{x^5}\,dx$

Optimal. Leaf size=35

$$\frac{1}{4}a^2\tan^{-1}\left(ax^2\right)+\frac{a}{4x^2}-\frac{\cot^{-1}\left(ax^2\right)}{4x^4}$$

```
[Out] 1/4*a/x^2-1/4*arccot(a*x^2)/x^4+1/4*a^2*arctan(a*x^2)
```

Rubi [A] time = 0.02, antiderivative size = 35, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.400, Rules used = {5034, 275, 325, 203}

$$\frac{1}{4}a^2\tan^{-1}\left(ax^2\right)+\frac{a}{4x^2}-\frac{\cot^{-1}\left(ax^2\right)}{4x^4}$$

Antiderivative was successfully verified.

```
[In] Int[ArcCot[a*x^2]/x^5,x]
```

```
[Out] a/(4*x^2) - ArcCot[a*x^2]/(4*x^4) + (a^2*ArcTan[a*x^2])/4
```

Rule 203

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

Rule 275

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

Rule 325

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

Rule 5034

```
Int[((a_.) + ArcCot[(c_.)*(x_)^(n_)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :
> Simp[((d*x)^(m + 1)*(a + b*ArcCot[c*x^n]))/(d*(m + 1)), x] + Dist[(b*c*n)
/(d*(m + 1)), Int[(x^(n - 1)*(d*x)^(m + 1))/(1 + c^2*x^(2*n)), x], x] /; Fr
eeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rubi steps

$$\int \frac{\cot^{-1}\left(ax^2\right)}{x^5}\,dx = -\frac{\cot^{-1}\left(ax^2\right)}{4x^4} - \frac{1}{2}a\int \frac{1}{x^3\left(1+a^2x^4\right)}\,dx$$
$$= -\frac{\cot^{-1}\left(ax^2\right)}{4x^4} - \frac{1}{4}a\,\text{Subst}\left(\int \frac{1}{x^2\left(1+a^2x^2\right)}\,dx, x, x^2\right)$$
$$= \frac{a}{4x^2} - \frac{\cot^{-1}\left(ax^2\right)}{4x^4} + \frac{1}{4}a^3\,\text{Subst}\left(\int \frac{1}{1+a^2x^2}\,dx, x, x^2\right)$$
$$= \frac{a}{4x^2} - \frac{\cot^{-1}\left(ax^2\right)}{4x^4} + \frac{1}{4}a^2\tan^{-1}\left(ax^2\right)$$

Mathematica [C] time = 0.01, size = 38, normalized size = 1.09

$$\frac{a\,{}_2F_1\left(-\frac{1}{2},1;\frac{1}{2};-a^2x^4\right)}{4x^2} - \frac{\cot^{-1}\left(ax^2\right)}{4x^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcCot[a*x^2]/x^5,x]
[Out] -1/4*ArcCot[a*x^2]/x^4 + (a*Hypergeometric2F1[-1/2, 1, 1/2, -(a^2*x^4)])/(4
*x^2)
```

fricas [A] time = 0.49, size = 28, normalized size = 0.80

$$\frac{ax^2 - \left(a^2x^4+1\right)\operatorname{arccot}\left(ax^2\right)}{4\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(a*x^2)/x^5,x, algorithm="fricas")
[Out] 1/4*(a*x^2 - (a^2*x^4 + 1)*arccot(a*x^2))/x^4
```

giac [A] time = 0.12, size = 29, normalized size = 0.83

$$\frac{1}{4}\left(a\arctan\left(ax^2\right) + \frac{1}{x^2}\right)a - \frac{\arctan\left(\frac{1}{ax^2}\right)}{4\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(a*x^2)/x^5,x, algorithm="giac")
[Out] 1/4*(a*arctan(a*x^2) + 1/x^2)*a - 1/4*arctan(1/(a*x^2))/x^4
```

maple [A] time = 0.04, size = 30, normalized size = 0.86

$$\frac{a}{4x^2} - \frac{\operatorname{arccot}\left(a\,x^2\right)}{4x^4} + \frac{a^2\arctan\left(a\,x^2\right)}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arccot(a*x^2)/x^5,x)
[Out] 1/4*a/x^2-1/4*arccot(a*x^2)/x^4+1/4*a^2*arctan(a*x^2)
```

maxima [A] time = 0.41, size = 27, normalized size = 0.77

$$\frac{1}{4}\left(a\arctan\left(ax^2\right)+\frac{1}{x^2}\right)a-\frac{\operatorname{arccot}\left(ax^2\right)}{4\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(a*x^2)/x^5,x, algorithm="maxima")
[Out] 1/4*(a*arctan(a*x^2) + 1/x^2)*a - 1/4*arccot(a*x^2)/x^4
```

mupad [B] time = 0.65, size = 32, normalized size = 0.91

$$\frac{a\,x^2-\operatorname{acot}\left(a\,x^2\right)+a^2\,x^4\operatorname{atan}\left(a\,x^2\right)}{4\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(acot(a*x^2)/x^5,x)
[Out] (a*x^2 - acot(a*x^2) + a^2*x^4*atan(a*x^2))/(4*x^4)
```

sympy [A] time = 1.05, size = 29, normalized size = 0.83

$$-\frac{a^2\operatorname{acot}\left(ax^2\right)}{4}+\frac{a}{4x^2}-\frac{\operatorname{acot}\left(ax^2\right)}{4x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(acot(a*x**2)/x**5,x)
[Out] -a**2*acot(a*x**2)/4 + a/(4*x**2) - acot(a*x**2)/(4*x**4)
```

3.80 $\int x^4 \cot^{-1}\left(ax^2\right)\,dx$

Optimal. Leaf size=152

$$-\frac{\log\left(ax^2-\sqrt{2}\sqrt{a}x+1\right)}{10\sqrt{2}a^{5/2}}+\frac{\log\left(ax^2+\sqrt{2}\sqrt{a}x+1\right)}{10\sqrt{2}a^{5/2}}+\frac{\tan^{-1}\left(1-\sqrt{2}\sqrt{a}x\right)}{5\sqrt{2}a^{5/2}}-\frac{\tan^{-1}\left(\sqrt{2}\sqrt{a}x+1\right)}{5\sqrt{2}a^{5/2}}+\frac{2x^3}{15a}+\frac{1}{5}x^5\cot^{-}$$

```
[Out] 2/15*x^3/a+1/5*x^5*arccot(a*x^2)-1/10*arctan(-1+x*2^(1/2)*a^(1/2))/a^(5/2)*
2^(1/2)-1/10*arctan(1+x*2^(1/2)*a^(1/2))/a^(5/2)*2^(1/2)-1/20*ln(1+a*x^2-x*
2^(1/2)*a^(1/2))/a^(5/2)*2^(1/2)+1/20*ln(1+a*x^2+x*2^(1/2)*a^(1/2))/a^(5/2)
*2^(1/2)
```

Rubi [A] time = 0.10, antiderivative size = 152, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 8, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.800, Rules used = {5034, 321, 297, 1162, 617, 204, 1165, 628}

$$-\frac{\log\left(ax^2-\sqrt{2}\sqrt{a}x+1\right)}{10\sqrt{2}a^{5/2}}+\frac{\log\left(ax^2+\sqrt{2}\sqrt{a}x+1\right)}{10\sqrt{2}a^{5/2}}+\frac{\tan^{-1}\left(1-\sqrt{2}\sqrt{a}x\right)}{5\sqrt{2}a^{5/2}}-\frac{\tan^{-1}\left(\sqrt{2}\sqrt{a}x+1\right)}{5\sqrt{2}a^{5/2}}+\frac{2x^3}{15a}+\frac{1}{5}x^5\cot^{-}$$

Antiderivative was successfully verified.

```
[In] Int[x^4*ArcCot[a*x^2],x]
```

```
[Out] (2*x^3)/(15*a) + (x^5*ArcCot[a*x^2])/5 + ArcTan[1 - Sqrt[2]*Sqrt[a]*x]/(5*S
qrt[2]*a^(5/2)) - ArcTan[1 + Sqrt[2]*Sqrt[a]*x]/(5*Sqrt[2]*a^(5/2)) - Log[1
 - Sqrt[2]*Sqrt[a]*x + a*x^2]/(10*Sqrt[2]*a^(5/2)) + Log[1 + Sqrt[2]*Sqrt[a
]*x + a*x^2]/(10*Sqrt[2]*a^(5/2))
```

Rule 204

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

Rule 297

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

Rule 321

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

Rule 617

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

Rule 628

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

Rule 1162

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

Rule 1165

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

Rule 5034

```
Int[((a_.) + ArcCot[(c_.)*(x_)^(n_)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :
> Simp[((d*x)^(m + 1)*(a + b*ArcCot[c*x^n]))/(d*(m + 1)), x] + Dist[(b*c*n)
/(d*(m + 1)), Int[(x^(n - 1)*(d*x)^(m + 1))/(1 + c^2*x^(2*n)), x], x] /; Fr
eeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rubi steps

$$
\begin{aligned}
\int x^4 \cot^{-1}\left(ax^2\right) dx &= \frac{1}{5}x^5 \cot^{-1}\left(ax^2\right) + \frac{1}{5}(2a)\int \frac{x^6}{1+a^2x^4}\,dx \\
&= \frac{2x^3}{15a} + \frac{1}{5}x^5 \cot^{-1}\left(ax^2\right) - \frac{2\int \frac{x^2}{1+a^2x^4}\,dx}{5a} \\
&= \frac{2x^3}{15a} + \frac{1}{5}x^5 \cot^{-1}\left(ax^2\right) + \frac{\int \frac{1-ax^2}{1+a^2x^4}\,dx}{5a^2} - \frac{\int \frac{1+ax^2}{1+a^2x^4}\,dx}{5a^2} \\
&= \frac{2x^3}{15a} + \frac{1}{5}x^5 \cot^{-1}\left(ax^2\right) - \frac{\int \frac{1}{\frac{1}{a}-\frac{\sqrt{2}x}{\sqrt{a}}+x^2}\,dx}{10a^3} - \frac{\int \frac{1}{\frac{1}{a}+\frac{\sqrt{2}x}{\sqrt{a}}+x^2}\,dx}{10a^3} - \frac{\int \frac{\frac{\sqrt{2}}{\sqrt{a}}+2x}{-\frac{1}{a}-\frac{\sqrt{2}x}{\sqrt{a}}-x^2}\,dx}{10\sqrt{2}\,a^{5/2}} - \frac{\int \frac{\frac{\sqrt{2}}{\sqrt{a}}}{-\frac{1}{a}+\sqrt{}}}{10\sqrt{}} \\
&= \frac{2x^3}{15a} + \frac{1}{5}x^5 \cot^{-1}\left(ax^2\right) - \frac{\log\left(1-\sqrt{2}\sqrt{a}\,x+ax^2\right)}{10\sqrt{2}\,a^{5/2}} + \frac{\log\left(1+\sqrt{2}\sqrt{a}\,x+ax^2\right)}{10\sqrt{2}\,a^{5/2}} - \frac{\text{Subst}}{} \\
&= \frac{2x^3}{15a} + \frac{1}{5}x^5 \cot^{-1}\left(ax^2\right) + \frac{\tan^{-1}\left(1-\sqrt{2}\sqrt{a}\,x\right)}{5\sqrt{2}\,a^{5/2}} - \frac{\tan^{-1}\left(1+\sqrt{2}\sqrt{a}\,x\right)}{5\sqrt{2}\,a^{5/2}} - \frac{\log\left(1-\sqrt{2}\sqrt{a}\right.}{10\sqrt{2}\,a}
\end{aligned}
$$

Mathematica [A] time = 0.05, size = 136, normalized size = 0.89

$$\frac{8a^{3/2}x^3 + 12a^{5/2}x^5\cot^{-1}\left(ax^2\right) - 3\sqrt{2}\log\left(ax^2-\sqrt{2}\sqrt{a}\,x+1\right) + 3\sqrt{2}\log\left(ax^2+\sqrt{2}\sqrt{a}\,x+1\right) + 6\sqrt{2}\tan^{-1}\left(1\right.}{60a^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^4*ArcCot[a*x^2],x]
```

```
[Out] (8*a^(3/2)*x^3 + 12*a^(5/2)*x^5*ArcCot[a*x^2] + 6*Sqrt[2]*ArcTan[1 - Sqrt[2
]*Sqrt[a]*x] - 6*Sqrt[2]*ArcTan[1 + Sqrt[2]*Sqrt[a]*x] - 3*Sqrt[2]*Log[1 -
```

```
Sqrt[2]*Sqrt[a]*x + a*x^2] + 3*Sqrt[2]*Log[1 + Sqrt[2]*Sqrt[a]*x + a*x^2])/
(60*a^(5/2))
```

fricas [B] time = 0.56, size = 239, normalized size = 1.57

$$\frac{12\,ax^{5}\arctan\left(\frac{1}{ax^{2}}\right)+8\,x^{3}+12\,\sqrt{2}\,a\left(\frac{1}{a^{10}}\right)^{\frac{1}{4}}\arctan\left(-\sqrt{2}\,a^{3}\left(\frac{1}{a^{10}}\right)^{\frac{1}{4}}x+\sqrt{2}\,\sqrt{\sqrt{2}\,a^{7}\left(\frac{1}{a^{10}}\right)^{\frac{3}{4}}x+a^{4}\sqrt{\frac{1}{a^{10}}}+x^{2}}\,a^{3}\left(\frac{1}{a^{10}}\right)^{\frac{1}{4}}-1\right)+1}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*arccot(a*x^2),x, algorithm="fricas")
```

```
[Out] 1/60*(12*a*x^5*arctan(1/(a*x^2)) + 8*x^3 + 12*sqrt(2)*a*(a^(-10))^(1/4)*arc
tan(-sqrt(2)*a^3*(a^(-10))^(1/4)*x + sqrt(2)*sqrt(sqrt(2)*a^7*(a^(-10))^(3/
4)*x + a^4*sqrt(a^(-10)) + x^2)*a^3*(a^(-10))^(1/4) - 1) + 12*sqrt(2)*a*(a^
(-10))^(1/4)*arctan(-sqrt(2)*a^3*(a^(-10))^(1/4)*x + sqrt(2)*sqrt(-sqrt(2)*
a^7*(a^(-10))^(3/4)*x + a^4*sqrt(a^(-10)) + x^2)*a^3*(a^(-10))^(1/4) + 1) +
 3*sqrt(2)*a*(a^(-10))^(1/4)*log(sqrt(2)*a^7*(a^(-10))^(3/4)*x + a^4*sqrt(a
^(-10)) + x^2) - 3*sqrt(2)*a*(a^(-10))^(1/4)*log(-sqrt(2)*a^7*(a^(-10))^(3/
4)*x + a^4*sqrt(a^(-10)) + x^2))/a
```

giac [A] time = 0.15, size = 156, normalized size = 1.03

$$\frac{1}{5}\,x^{5}\arctan\left(\frac{1}{ax^{2}}\right)+\frac{1}{60}\,a\left(\frac{8\,x^{3}}{a^{2}}-\frac{6\,\sqrt{2}\arctan\left(\frac{1}{2}\,\sqrt{2}\left(2\,x+\frac{\sqrt{2}}{\sqrt{|a|}}\right)\sqrt{|a|}\right)}{a^{2}|a|^{\frac{3}{2}}}-\frac{6\,\sqrt{2}\arctan\left(\frac{1}{2}\,\sqrt{2}\left(2\,x-\frac{\sqrt{2}}{\sqrt{|a|}}\right)\sqrt{|a|}\right)}{a^{2}|a|^{\frac{3}{2}}}+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*arccot(a*x^2),x, algorithm="giac")
```

```
[Out] 1/5*x^5*arctan(1/(a*x^2)) + 1/60*a*(8*x^3/a^2 - 6*sqrt(2)*arctan(1/2*sqrt(2
)*(2*x + sqrt(2)/sqrt(abs(a)))*sqrt(abs(a)))/(a^2*abs(a)^(3/2)) - 6*sqrt(2)
*arctan(1/2*sqrt(2)*(2*x - sqrt(2)/sqrt(abs(a)))*sqrt(abs(a)))/(a^2*abs(a)^
(3/2)) + 3*sqrt(2)*sqrt(abs(a))*log(x^2 + sqrt(2)*x/sqrt(abs(a)) + 1/abs(a)
)/a^4 - 3*sqrt(2)*log(x^2 - sqrt(2)*x/sqrt(abs(a)) + 1/abs(a))/(a^2*abs(a)^
(3/2)))
```

maple [A] time = 0.06, size = 129, normalized size = 0.85

$$\frac{x^{5}\operatorname{arccot}\left(a\,x^{2}\right)}{5}+\frac{2x^{3}}{15a}-\frac{\sqrt{2}\;\ln\left(\frac{x^{2}-\left(\frac{1}{a^{2}}\right)^{\frac{1}{4}}x\sqrt{2}+\sqrt{\frac{1}{a^{2}}}}{x^{2}+\left(\frac{1}{a^{2}}\right)^{\frac{1}{4}}x\sqrt{2}+\sqrt{\frac{1}{a^{2}}}}\right)}{20a^{3}\left(\frac{1}{a^{2}}\right)^{\frac{1}{4}}}-\frac{\sqrt{2}\;\arctan\left(\frac{\sqrt{2}\,x}{\left(\frac{1}{a^{2}}\right)^{\frac{1}{4}}}+1\right)}{10a^{3}\left(\frac{1}{a^{2}}\right)^{\frac{1}{4}}}-\frac{\sqrt{2}\;\arctan\left(\frac{\sqrt{2}\,x}{\left(\frac{1}{a^{2}}\right)^{\frac{1}{4}}}-1\right)}{10a^{3}\left(\frac{1}{a^{2}}\right)^{\frac{1}{4}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*arccot(a*x^2),x)
```

```
[Out] 1/5*x^5*arccot(a*x^2)+2/15*x^3/a-1/20/a^3/(1/a^2)^(1/4)*2^(1/2)*ln((x^2-(1/
a^2)^(1/4)*x*2^(1/2)+(1/a^2)^(1/2))/(x^2+(1/a^2)^(1/4)*x*2^(1/2)+(1/a^2)^(1
/2)))-1/10/a^3/(1/a^2)^(1/4)*2^(1/2)*arctan(2^(1/2)/(1/a^2)^(1/4)*x+1)-1/10
/a^3/(1/a^2)^(1/4)*2^(1/2)*arctan(2^(1/2)/(1/a^2)^(1/4)*x-1)
```

maxima [A] time = 0.41, size = 137, normalized size = 0.90

$$\frac{1}{5}x^5\operatorname{arccot}\left(ax^2\right)+\frac{1}{60}a\left(\frac{8x^3}{a^2}-\frac{3\left(\frac{2\sqrt{2}\arctan\left(\frac{\sqrt{2}\left(2ax+\sqrt{2}\sqrt{a}\right)}{2\sqrt{a}}\right)}{a^{\frac{3}{2}}}+\frac{2\sqrt{2}\arctan\left(\frac{\sqrt{2}\left(2ax-\sqrt{2}\sqrt{a}\right)}{2\sqrt{a}}\right)}{a^{\frac{3}{2}}}-\frac{\sqrt{2}\log\left(ax^2+\sqrt{2}\sqrt{a}x+1\right)}{a^{\frac{3}{2}}}+\cdots\right)}{a^2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*arccot(a*x^2),x, algorithm="maxima")
```

```
[Out] 1/5*x^5*arccot(a*x^2) + 1/60*a*(8*x^3/a^2 - 3*(2*sqrt(2)*arctan(1/2*sqrt(2)
*(2*a*x + sqrt(2)*sqrt(a))/sqrt(a))/a^(3/2) + 2*sqrt(2)*arctan(1/2*sqrt(2)*
(2*a*x - sqrt(2)*sqrt(a))/sqrt(a))/a^(3/2) - sqrt(2)*log(a*x^2 + sqrt(2)*sq
rt(a)*x + 1)/a^(3/2) + sqrt(2)*log(a*x^2 - sqrt(2)*sqrt(a)*x + 1)/a^(3/2))/
a^2)
```

mupad [B] time = 0.44, size = 54, normalized size = 0.36

$$\frac{x^5\operatorname{acot}\left(a\,x^2\right)}{5}+\frac{2\,x^3}{15\,a}-\frac{(-1)^{1/4}\operatorname{atan}\left((-1)^{1/4}\,\sqrt{a}\,x\right)}{5\,a^{5/2}}-\frac{(-1)^{1/4}\operatorname{atan}\left((-1)^{1/4}\,\sqrt{a}\,x\,1\mathrm{i}\right)\,1\mathrm{i}}{5\,a^{5/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*acot(a*x^2),x)
```

```
[Out] (x^5*acot(a*x^2))/5 + (2*x^3)/(15*a) - ((-1)^(1/4)*atan((-1)^(1/4)*a^(1/2)*
x))/(5*a^(5/2)) - ((-1)^(1/4)*atan((-1)^(1/4)*a^(1/2)*x*1i)*1i)/(5*a^(5/2))
```

sympy [A] time = 30.12, size = 167, normalized size = 1.10

$$\begin{cases}\frac{x^5\operatorname{acot}\left(ax^2\right)}{5}+\frac{2x^3}{15a}-\frac{\sqrt[4]{-1}\sqrt[4]{\frac{1}{a^2}}\operatorname{acot}\left(ax^2\right)}{5a^2}+\frac{(-1)^{\frac{3}{4}}\log\left(x-\sqrt[4]{-1}\sqrt[4]{\frac{1}{a^2}}\right)}{5a^3\sqrt[4]{\frac{1}{a^2}}}-\frac{(-1)^{\frac{3}{4}}\log\left(x^2+i\sqrt{\frac{1}{a^2}}\right)}{10a^3\sqrt[4]{\frac{1}{a^2}}}-\frac{(-1)^{\frac{3}{4}}\operatorname{atan}\left(\frac{(-1)^{\frac{3}{4}}x}{\sqrt[4]{\frac{1}{a^2}}}\right)}{5a^3\sqrt[4]{\frac{1}{a^2}}} & \text{for } a\neq 0 \\ \frac{\pi x^5}{10} & \text{otherwise}\end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*acot(a*x**2),x)
```

```
[Out] Piecewise((x**5*acot(a*x**2)/5 + 2*x**3/(15*a) - (-1)**(1/4)*(a**(-2))**(1/
4)*acot(a*x**2)/(5*a**2) + (-1)**(3/4)*log(x - (-1)**(1/4)*(a**(-2))**(1/4)
)/(5*a**3*(a**(-2))**(1/4)) - (-1)**(3/4)*log(x**2 + I*sqrt(a**(-2)))/(10*a
**3*(a**(-2))**(1/4)) - (-1)**(3/4)*atan((-1)**(3/4)*x/(a**(-2))**(1/4))/(5
*a**3*(a**(-2))**(1/4)), Ne(a, 0)), (pi*x**5/10, True))
```

3.81 $\int x^2 \cot^{-1}\left(ax^2\right)\,dx$

Optimal. Leaf size=150

$$\frac{\log\left(ax^2-\sqrt{2}\sqrt{a}\,x+1\right)}{6\sqrt{2}\,a^{3/2}}-\frac{\log\left(ax^2+\sqrt{2}\sqrt{a}\,x+1\right)}{6\sqrt{2}\,a^{3/2}}+\frac{\tan^{-1}\left(1-\sqrt{2}\sqrt{a}\,x\right)}{3\sqrt{2}\,a^{3/2}}-\frac{\tan^{-1}\left(\sqrt{2}\sqrt{a}\,x+1\right)}{3\sqrt{2}\,a^{3/2}}+\frac{1}{3}x^3\cot^{-1}\left(ax^2\right)$$

```
[Out] 2/3*x/a+1/3*x^3*arccot(a*x^2)-1/6*arctan(-1+x*2^(1/2)*a^(1/2))/a^(3/2)*2^(1
/2)-1/6*arctan(1+x*2^(1/2)*a^(1/2))/a^(3/2)*2^(1/2)+1/12*ln(1+a*x^2-x*2^(1/
2)*a^(1/2))/a^(3/2)*2^(1/2)-1/12*ln(1+a*x^2+x*2^(1/2)*a^(1/2))/a^(3/2)*2^(1
/2)
```

Rubi [A] time = 0.09, antiderivative size = 150, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 8, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.800, Rules used = {5034, 321, 211, 1165, 628, 1162, 617, 204}

$$\frac{\log\left(ax^2-\sqrt{2}\sqrt{a}\,x+1\right)}{6\sqrt{2}\,a^{3/2}}-\frac{\log\left(ax^2+\sqrt{2}\sqrt{a}\,x+1\right)}{6\sqrt{2}\,a^{3/2}}+\frac{\tan^{-1}\left(1-\sqrt{2}\sqrt{a}\,x\right)}{3\sqrt{2}\,a^{3/2}}-\frac{\tan^{-1}\left(\sqrt{2}\sqrt{a}\,x+1\right)}{3\sqrt{2}\,a^{3/2}}+\frac{1}{3}x^3\cot^{-1}\left(ax^2\right)$$

Antiderivative was successfully verified.

```
[In] Int[x^2*ArcCot[a*x^2],x]
```

```
[Out] (2*x)/(3*a) + (x^3*ArcCot[a*x^2])/3 + ArcTan[1 - Sqrt[2]*Sqrt[a]*x]/(3*Sqrt
[2]*a^(3/2)) - ArcTan[1 + Sqrt[2]*Sqrt[a]*x]/(3*Sqrt[2]*a^(3/2)) + Log[1 -
Sqrt[2]*Sqrt[a]*x + a*x^2]/(6*Sqrt[2]*a^(3/2)) - Log[1 + Sqrt[2]*Sqrt[a]*x
+ a*x^2]/(6*Sqrt[2]*a^(3/2))
```

Rule 204

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

Rule 211

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

Rule 321

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

Rule 617

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

Rule 628

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

Rule 1162

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

Rule 1165

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

Rule 5034

```
Int[((a_.) + ArcCot[(c_.)*(x_)^(n_)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :
> Simp[((d*x)^(m + 1)*(a + b*ArcCot[c*x^n]))/(d*(m + 1)), x] + Dist[(b*c*n)
/(d*(m + 1)), Int[(x^(n - 1)*(d*x)^(m + 1))/(1 + c^2*x^(2*n)), x], x] /; Fr
eeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rubi steps

$$\begin{aligned}\int x^2\cot^{-1}\left(ax^2\right)dx &= \frac{1}{3}x^3\cot^{-1}\left(ax^2\right)+\frac{1}{3}(2a)\int\frac{x^4}{1+a^2x^4}\,dx\\
&= \frac{2x}{3a}+\frac{1}{3}x^3\cot^{-1}\left(ax^2\right)-\frac{2\int\frac{1}{1+a^2x^4}\,dx}{3a}\\
&= \frac{2x}{3a}+\frac{1}{3}x^3\cot^{-1}\left(ax^2\right)-\frac{\int\frac{1-ax^2}{1+a^2x^4}\,dx}{3a}-\frac{\int\frac{1+ax^2}{1+a^2x^4}\,dx}{3a}\\
&= \frac{2x}{3a}+\frac{1}{3}x^3\cot^{-1}\left(ax^2\right)-\frac{\int\frac{1}{\frac{1}{a}-\frac{\sqrt{2}x}{\sqrt{a}}+x^2}\,dx}{6a^2}-\frac{\int\frac{1}{\frac{1}{a}+\frac{\sqrt{2}x}{\sqrt{a}}+x^2}\,dx}{6a^2}+\frac{\int\frac{\frac{\sqrt{2}}{\sqrt{a}}+2x}{-\frac{1}{a}-\frac{\sqrt{2}x}{\sqrt{a}}-x^2}\,dx}{6\sqrt{2}\,a^{3/2}}+\frac{\int\frac{\frac{\sqrt{2}}{\sqrt{a}}-}{-\frac{1}{a}+\frac{\sqrt{2}}{\sqrt{}}}}{6\sqrt{2}}\\
&= \frac{2x}{3a}+\frac{1}{3}x^3\cot^{-1}\left(ax^2\right)+\frac{\log\left(1-\sqrt{2}\sqrt{a}\,x+ax^2\right)}{6\sqrt{2}\,a^{3/2}}-\frac{\log\left(1+\sqrt{2}\sqrt{a}\,x+ax^2\right)}{6\sqrt{2}\,a^{3/2}}-\frac{\text{Subst}\left(\right.}{}\\
&= \frac{2x}{3a}+\frac{1}{3}x^3\cot^{-1}\left(ax^2\right)+\frac{\tan^{-1}\left(1-\sqrt{2}\sqrt{a}\,x\right)}{3\sqrt{2}\,a^{3/2}}-\frac{\tan^{-1}\left(1+\sqrt{2}\sqrt{a}\,x\right)}{3\sqrt{2}\,a^{3/2}}+\frac{\log\left(1-\sqrt{2}\sqrt{a}\right.}{6\sqrt{2}\,a^{3/}}\end{aligned}$$

Mathematica [A] time = 0.03, size = 133, normalized size = 0.89

$$\frac{4a^{3/2}x^3\cot^{-1}\left(ax^2\right)+\sqrt{2}\log\left(ax^2-\sqrt{2}\sqrt{a}\,x+1\right)-\sqrt{2}\log\left(ax^2+\sqrt{2}\sqrt{a}\,x+1\right)+8\sqrt{a}\,x+2\sqrt{2}\tan^{-1}\left(1-\sqrt{}\right.}{12a^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*ArcCot[a*x^2],x]
```

```
[Out] (8*Sqrt[a]*x + 4*a^(3/2)*x^3*ArcCot[a*x^2] + 2*Sqrt[2]*ArcTan[1 - Sqrt[2]*S
qrt[a]*x] - 2*Sqrt[2]*ArcTan[1 + Sqrt[2]*Sqrt[a]*x] + Sqrt[2]*Log[1 - Sqrt[
```

```
2]*Sqrt[a]*x + a*x^2] - Sqrt[2]*Log[1 + Sqrt[2]*Sqrt[a]*x + a*x^2])/(12*a^(
3/2))
```

fricas [B] time = 0.81, size = 228, normalized size = 1.52

$$\frac{4\,ax^3\arctan\left(\frac{1}{ax^2}\right) + 4\sqrt{2}\,a\frac{1}{a^6}^{\frac{1}{4}}\arctan\left(-\sqrt{2}\,a^5\frac{1}{a^6}^{\frac{3}{4}}x + \sqrt{2}\sqrt{\sqrt{2}\,a\frac{1}{a^6}^{\frac{1}{4}}x + a^2\sqrt{\frac{1}{a^6}} + x^2}\,a^5\frac{1}{a^6}^{\frac{3}{4}} - 1\right) + 4\sqrt{2}\,a\frac{1}{a^6}^{\frac{1}{4}}\,\mathrm{arct}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*arccot(a*x^2),x, algorithm="fricas")
```

```
[Out] 1/12*(4*a*x^3*arctan(1/(a*x^2)) + 4*sqrt(2)*a*(a^(-6))^(1/4)*arctan(-sqrt(2
)*a^5*(a^(-6))^(3/4)*x + sqrt(2)*sqrt(sqrt(2)*a*(a^(-6))^(1/4)*x + a^2*sqrt
(a^(-6)) + x^2)*a^5*(a^(-6))^(3/4) - 1) + 4*sqrt(2)*a*(a^(-6))^(1/4)*arctan
(-sqrt(2)*a^5*(a^(-6))^(3/4)*x + sqrt(2)*sqrt(-sqrt(2)*a*(a^(-6))^(1/4)*x +
 a^2*sqrt(a^(-6)) + x^2)*a^5*(a^(-6))^(3/4) + 1) - sqrt(2)*a*(a^(-6))^(1/4)
*log(sqrt(2)*a*(a^(-6))^(1/4)*x + a^2*sqrt(a^(-6)) + x^2) + sqrt(2)*a*(a^(-
6))^(1/4)*log(-sqrt(2)*a*(a^(-6))^(1/4)*x + a^2*sqrt(a^(-6)) + x^2) + 8*x)/
a
```

giac [A] time = 0.14, size = 153, normalized size = 1.02

$$\frac{1}{3}\,x^3\arctan\left(\frac{1}{ax^2}\right)+\frac{1}{12}\,a\left(\frac{8\,x}{a^2} - \frac{2\sqrt{2}\arctan\left(\frac{1}{2}\sqrt{2}\left(2\,x + \frac{\sqrt{2}}{\sqrt{|a|}}\right)\sqrt{|a|}\right)}{a^2\sqrt{|a|}} - \frac{2\sqrt{2}\arctan\left(\frac{1}{2}\sqrt{2}\left(2\,x - \frac{\sqrt{2}}{\sqrt{|a|}}\right)\sqrt{|a|}\right)}{a^2\sqrt{|a|}} - \cdots\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*arccot(a*x^2),x, algorithm="giac")
```

```
[Out] 1/3*x^3*arctan(1/(a*x^2)) + 1/12*a*(8*x/a^2 - 2*sqrt(2)*arctan(1/2*sqrt(2)*
(2*x + sqrt(2)/sqrt(abs(a)))*sqrt(abs(a)))/(a^2*sqrt(abs(a))) - 2*sqrt(2)*a
rctan(1/2*sqrt(2)*(2*x - sqrt(2)/sqrt(abs(a)))*sqrt(abs(a)))/(a^2*sqrt(abs(
a))) - sqrt(2)*log(x^2 + sqrt(2)*x/sqrt(abs(a)) + 1/abs(a))/(a^2*sqrt(abs(a
))) + sqrt(2)*log(x^2 - sqrt(2)*x/sqrt(abs(a)) + 1/abs(a))/(a^2*sqrt(abs(a)
)))
```

maple [A] time = 0.04, size = 127, normalized size = 0.85

$$\frac{x^3\mathrm{arccot}\left(a\,x^2\right)}{3}+\frac{2x}{3a}-\frac{\left(\frac{1}{a^2}\right)^{\frac{1}{4}}\sqrt{2}\,\ln\left(\frac{x^2+\left(\frac{1}{a^2}\right)^{\frac{1}{4}}x\sqrt{2}+\sqrt{\frac{1}{a^2}}}{x^2-\left(\frac{1}{a^2}\right)^{\frac{1}{4}}x\sqrt{2}+\sqrt{\frac{1}{a^2}}}\right)}{12a}-\frac{\left(\frac{1}{a^2}\right)^{\frac{1}{4}}\sqrt{2}\,\arctan\left(\frac{\sqrt{2}\,x}{\left(\frac{1}{a^2}\right)^{\frac{1}{4}}}+1\right)}{6a}-\frac{\left(\frac{1}{a^2}\right)^{\frac{1}{4}}\sqrt{2}\,\arctan\left(\frac{\sqrt{2}\,x}{\left(\frac{1}{a^2}\right)^{\frac{1}{4}}}\cdots\right)}{6a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*arccot(a*x^2),x)
```

```
[Out] 1/3*x^3*arccot(a*x^2)+2/3*x/a-1/12/a*(1/a^2)^(1/4)*2^(1/2)*ln((x^2+(1/a^2)^
(1/4)*x*2^(1/2)+(1/a^2)^(1/2))/(x^2-(1/a^2)^(1/4)*x*2^(1/2)+(1/a^2)^(1/2)))
-1/6/a*(1/a^2)^(1/4)*2^(1/2)*arctan(2^(1/2)/(1/a^2)^(1/4)*x+1)-1/6/a*(1/a^2
)^(1/4)*2^(1/2)*arctan(2^(1/2)/(1/a^2)^(1/4)*x-1)
```

maxima [A] time = 0.41, size = 135, normalized size = 0.90

$$\frac{1}{3}\,x^3\,\mathrm{arccot}\left(ax^2\right)+\frac{1}{12}\,a\left(\frac{8\,x}{a^2} - \frac{\frac{2\sqrt{2}\arctan\left(\frac{\sqrt{2}\left(2\,ax+\sqrt{2}\sqrt{a}\right)}{2\sqrt{a}}\right)}{\sqrt{a}} + \frac{2\sqrt{2}\arctan\left(\frac{\sqrt{2}\left(2\,ax-\sqrt{2}\sqrt{a}\right)}{2\sqrt{a}}\right)}{\sqrt{a}} + \frac{\sqrt{2}\log\left(ax^2+\sqrt{2}\sqrt{a}\,x+1\right)}{\sqrt{a}} - \frac{\sqrt{2}\log\left(a\cdots\right.}{}}{a^2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*arccot(a*x^2),x, algorithm="maxima")
```

```
[Out] 1/3*x^3*arccot(a*x^2) + 1/12*a*(8*x/a^2 - (2*sqrt(2)*arctan(1/2*sqrt(2)*(2*
a*x + sqrt(2)*sqrt(a))/sqrt(a))/sqrt(a) + 2*sqrt(2)*arctan(1/2*sqrt(2)*(2*a
*x - sqrt(2)*sqrt(a))/sqrt(a))/sqrt(a) + sqrt(2)*log(a*x^2 + sqrt(2)*sqrt(a
)*x + 1)/sqrt(a) - sqrt(2)*log(a*x^2 - sqrt(2)*sqrt(a)*x + 1)/sqrt(a))/a^2)
```

mupad [B] time = 0.70, size = 52, normalized size = 0.35

$$\frac{x^3\,\mathrm{acot}\left(a\,x^2\right)}{3}+\frac{2\,x}{3\,a}+\frac{{\left(-1\right)}^{1/4}\,\mathrm{atan}\left({\left(-1\right)}^{1/4}\,\sqrt{a}\,x\right)\,1{}\mathrm{i}}{3\,a^{3/2}}+\frac{{\left(-1\right)}^{1/4}\,\mathrm{atan}\left({\left(-1\right)}^{1/4}\,\sqrt{a}\,x\,1{}\mathrm{i}\right)}{3\,a^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*acot(a*x^2),x)
```

```
[Out] (x^3*acot(a*x^2))/3 + (2*x)/(3*a) + ((-1)^(1/4)*atan((-1)^(1/4)*a^(1/2)*x)*
1i)/(3*a^(3/2)) + ((-1)^(1/4)*atan((-1)^(1/4)*a^(1/2)*x*1i))/(3*a^(3/2))
```

sympy [A] time = 17.16, size = 156, normalized size = 1.04

$$\begin{cases} \frac{x^{3} \operatorname{acot}{\left(a x^{2} \right)}}{3} + \frac{\left(-1\right)^{\frac{3}{4}} \left(\frac{1}{a^{2}}\right)^{\frac{3}{4}} \operatorname{acot}{\left(a x^{2} \right)}}{3} + \frac{2 x}{3 a} + \frac{\sqrt[4]{-1} \sqrt[4]{\frac{1}{a^{2}}} \log{\left(x - \sqrt[4]{-1} \sqrt[4]{\frac{1}{a^{2}}} \right)}}{3 a} - \frac{\sqrt[4]{-1} \sqrt[4]{\frac{1}{a^{2}}} \log{\left(x^{2} + i \sqrt{\frac{1}{a^{2}}} \right)}}{6 a} + \frac{\sqrt[4]{-1} \sqrt[4]{\frac{1}{a^{2}}} \operatorname{atan}{\left(\frac{\left(-1\right)^{\frac{3}{4}} x}{\sqrt[4]{\frac{1}{a^{2}}}} \right)}}{3 a} \\ \frac{\pi x^{3}}{6} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*acot(a*x**2),x)
```

```
[Out] Piecewise((x**3*acot(a*x**2)/3 + (-1)**(3/4)*(a**(-2))**(3/4)*acot(a*x**2)/
3 + 2*x/(3*a) + (-1)**(1/4)*(a**(-2))**(1/4)*log(x - (-1)**(1/4)*(a**(-2))*
*(1/4))/(3*a) - (-1)**(1/4)*(a**(-2))**(1/4)*log(x**2 + I*sqrt(a**(-2)))/(6
*a) + (-1)**(1/4)*(a**(-2))**(1/4)*atan((-1)**(3/4)*x/(a**(-2))**(1/4))/(3*
a), Ne(a, 0)), (pi*x**3/6, True))
```

3.82 $\int \cot^{-1}\left(ax^2\right)\,dx$

Optimal. Leaf size=132

$$\frac{\log\left(ax^2-\sqrt{2}\sqrt{a}x+1\right)}{2\sqrt{2}\sqrt{a}}-\frac{\log\left(ax^2+\sqrt{2}\sqrt{a}x+1\right)}{2\sqrt{2}\sqrt{a}}+x\cot^{-1}\left(ax^2\right)-\frac{\tan^{-1}\left(1-\sqrt{2}\sqrt{a}x\right)}{\sqrt{2}\sqrt{a}}+\frac{\tan^{-1}\left(\sqrt{2}\sqrt{a}x+1\right)}{\sqrt{2}\sqrt{a}}$$

```
[Out] x*arccot(a*x^2)+1/2*arctan(-1+x*2^(1/2)*a^(1/2))*2^(1/2)/a^(1/2)+1/2*arctan
(1+x*2^(1/2)*a^(1/2))*2^(1/2)/a^(1/2)+1/4*ln(1+a*x^2-x*2^(1/2)*a^(1/2))*2^(
1/2)/a^(1/2)-1/4*ln(1+a*x^2+x*2^(1/2)*a^(1/2))*2^(1/2)/a^(1/2)
```

Rubi [A] time = 0.08, antiderivative size = 132, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 7, integrand size = 6, $\frac{\text{number of rules}}{\text{integrand size}}$ = 1.167, Rules used = {5028, 297, 1162, 617, 204, 1165, 628}

$$\frac{\log\left(ax^2-\sqrt{2}\sqrt{a}x+1\right)}{2\sqrt{2}\sqrt{a}}-\frac{\log\left(ax^2+\sqrt{2}\sqrt{a}x+1\right)}{2\sqrt{2}\sqrt{a}}+x\cot^{-1}\left(ax^2\right)-\frac{\tan^{-1}\left(1-\sqrt{2}\sqrt{a}x\right)}{\sqrt{2}\sqrt{a}}+\frac{\tan^{-1}\left(\sqrt{2}\sqrt{a}x+1\right)}{\sqrt{2}\sqrt{a}}$$

Antiderivative was successfully verified.

```
[In] Int[ArcCot[a*x^2],x]
```

```
[Out] x*ArcCot[a*x^2] - ArcTan[1 - Sqrt[2]*Sqrt[a]*x]/(Sqrt[2]*Sqrt[a]) + ArcTan[
1 + Sqrt[2]*Sqrt[a]*x]/(Sqrt[2]*Sqrt[a]) + Log[1 - Sqrt[2]*Sqrt[a]*x + a*x^
2]/(2*Sqrt[2]*Sqrt[a]) - Log[1 + Sqrt[2]*Sqrt[a]*x + a*x^2]/(2*Sqrt[2]*Sqrt
[a])
```

Rule 204

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

Rule 297

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

Rule 617

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

Rule 628

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

Rule 1162

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

```
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 1165

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

Rule 5028

```
Int[ArcCot[(c_.)*(x_)^(n_)], x_Symbol] :> Simp[x*ArcCot[c*x^n], x] + Dist[c
*n, Int[x^n/(1 + c^2*x^(2*n)), x], x] /; FreeQ[{c, n}, x]
```

Rubi steps

$$\begin{aligned}\int \cot^{-1}\left(ax^2\right)\,dx &= x\cot^{-1}\left(ax^2\right)+(2a)\int \frac{x^2}{1+a^2x^4}\,dx\\ &= x\cot^{-1}\left(ax^2\right)-\int \frac{1-ax^2}{1+a^2x^4}\,dx+\int \frac{1+ax^2}{1+a^2x^4}\,dx\\ &= x\cot^{-1}\left(ax^2\right)+\frac{\int \frac{1}{\frac{1}{a}-\frac{\sqrt{2}x}{\sqrt{a}}+x^2}\,dx}{2a}+\frac{\int \frac{1}{\frac{1}{a}+\frac{\sqrt{2}x}{\sqrt{a}}+x^2}\,dx}{2a}+\frac{\int \frac{\frac{\sqrt{2}}{\sqrt{a}}+2x}{-\frac{1}{a}-\frac{\sqrt{2}x}{\sqrt{a}}-x^2}\,dx}{2\sqrt{2}\sqrt{a}}+\frac{\int \frac{\frac{\sqrt{2}}{\sqrt{a}}-2x}{-\frac{1}{a}+\frac{\sqrt{2}x}{\sqrt{a}}-x^2}\,dx}{2\sqrt{2}\sqrt{a}}\\ &= x\cot^{-1}\left(ax^2\right)+\frac{\log\left(1-\sqrt{2}\sqrt{a}x+ax^2\right)}{2\sqrt{2}\sqrt{a}}-\frac{\log\left(1+\sqrt{2}\sqrt{a}x+ax^2\right)}{2\sqrt{2}\sqrt{a}}+\frac{\text{Subst}\left(\int \frac{1}{-1-x^2}\,dx,\right.}{\sqrt{2}\sqrt{}}\\ &= x\cot^{-1}\left(ax^2\right)-\frac{\tan^{-1}\left(1-\sqrt{2}\sqrt{a}x\right)}{\sqrt{2}\sqrt{a}}+\frac{\tan^{-1}\left(1+\sqrt{2}\sqrt{a}x\right)}{\sqrt{2}\sqrt{a}}+\frac{\log\left(1-\sqrt{2}\sqrt{a}x+ax^2\right)}{2\sqrt{2}\sqrt{a}}-\end{aligned}$$

Mathematica [A] time = 0.04, size = 102, normalized size = 0.77

$$x\cot^{-1}\left(ax^2\right)+\frac{\log\left(ax^2-\sqrt{2}\sqrt{a}x+1\right)-\log\left(ax^2+\sqrt{2}\sqrt{a}x+1\right)-2\tan^{-1}\left(1-\sqrt{2}\sqrt{a}x\right)+2\tan^{-1}\left(\sqrt{2}\sqrt{a}x\right.}{2\sqrt{2}\sqrt{a}}$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcCot[a*x^2],x]
```

```
[Out] x*ArcCot[a*x^2] + (-2*ArcTan[1 - Sqrt[2]*Sqrt[a]*x] + 2*ArcTan[1 + Sqrt[2]*
Sqrt[a]*x] + Log[1 - Sqrt[2]*Sqrt[a]*x + a*x^2] - Log[1 + Sqrt[2]*Sqrt[a]*x
 + a*x^2])/(2*Sqrt[2]*Sqrt[a])
```

fricas [A] time = 0.62, size = 189, normalized size = 1.43

$$x\arctan\left(\frac{1}{ax^2}\right)-\sqrt{2}\left(\frac{1}{a^2}\right)^{\frac{1}{4}}\arctan\left(-\sqrt{2}a\left(\frac{1}{a^2}\right)^{\frac{1}{4}}x+\sqrt{2}\sqrt{\sqrt{2}a\left(\frac{1}{a^2}\right)^{\frac{3}{4}}x+x^2+\sqrt{\frac{1}{a^2}}}\,a\left(\frac{1}{a^2}\right)^{\frac{1}{4}}-1\right)-\sqrt{2}\left(\frac{1}{a^2}\right)^{\frac{1}{4}}\arctan\left(-\sqrt{2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(a*x^2),x, algorithm="fricas")
```

```
[Out] x*arctan(1/(a*x^2)) - sqrt(2)*(a^(-2))^(1/4)*arctan(-sqrt(2)*a*(a^(-2))^(1/
4)*x + sqrt(2)*sqrt(sqrt(2)*a*(a^(-2))^(3/4)*x + x^2 + sqrt(a^(-2)))*a*(a^(
```

```
-2))^(1/4) - 1) - sqrt(2)*(a^(-2))^(1/4)*arctan(-sqrt(2)*a*(a^(-2))^(1/4)*x
 + sqrt(2)*sqrt(-sqrt(2)*a*(a^(-2))^(3/4)*x + x^2 + sqrt(a^(-2)))*a*(a^(-2)
)^(1/4) + 1) - 1/4*sqrt(2)*(a^(-2))^(1/4)*log(sqrt(2)*a*(a^(-2))^(3/4)*x +
x^2 + sqrt(a^(-2))) + 1/4*sqrt(2)*(a^(-2))^(1/4)*log(-sqrt(2)*a*(a^(-2))^(3
/4)*x + x^2 + sqrt(a^(-2)))
```

giac [A] time = 0.14, size = 144, normalized size = 1.09

$$\frac{1}{4}a\left(\frac{2\sqrt{2}\sqrt{|a|}\arctan\left(\frac{1}{2}\sqrt{2}\left(2x+\frac{\sqrt{2}}{\sqrt{|a|}}\right)\sqrt{|a|}\right)}{a^2}+\frac{2\sqrt{2}\sqrt{|a|}\arctan\left(\frac{1}{2}\sqrt{2}\left(2x-\frac{\sqrt{2}}{\sqrt{|a|}}\right)\sqrt{|a|}\right)}{a^2}-\frac{\sqrt{2}\sqrt{|a|}\log\left(x^2+\right.}{a^2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(a*x^2),x, algorithm="giac")
```

```
[Out] 1/4*a*(2*sqrt(2)*sqrt(abs(a))*arctan(1/2*sqrt(2)*(2*x + sqrt(2)/sqrt(abs(a)
))*sqrt(abs(a)))/a^2 + 2*sqrt(2)*sqrt(abs(a))*arctan(1/2*sqrt(2)*(2*x - sqr
t(2)/sqrt(abs(a)))*sqrt(abs(a)))/a^2 - sqrt(2)*sqrt(abs(a))*log(x^2 + sqrt(
2)*x/sqrt(abs(a)) + 1/abs(a))/a^2 + sqrt(2)*sqrt(abs(a))*log(x^2 - sqrt(2)*
x/sqrt(abs(a)) + 1/abs(a))/a^2) + x*arctan(1/(a*x^2))
```

maple [A] time = 0.04, size = 118, normalized size = 0.89

$$x\,\mathrm{arccot}\left(a\,x^2\right)+\frac{\sqrt{2}\,\ln\left(\frac{x^2-\left(\frac{1}{a^2}\right)^{\frac{1}{4}}x\sqrt{2}+\sqrt{\frac{1}{a^2}}}{x^2+\left(\frac{1}{a^2}\right)^{\frac{1}{4}}x\sqrt{2}+\sqrt{\frac{1}{a^2}}}\right)}{4a\left(\frac{1}{a^2}\right)^{\frac{1}{4}}}+\frac{\sqrt{2}\,\arctan\left(\frac{\sqrt{2}\,x}{\left(\frac{1}{a^2}\right)^{\frac{1}{4}}}+1\right)}{2a\left(\frac{1}{a^2}\right)^{\frac{1}{4}}}+\frac{\sqrt{2}\,\arctan\left(\frac{\sqrt{2}\,x}{\left(\frac{1}{a^2}\right)^{\frac{1}{4}}}-1\right)}{2a\left(\frac{1}{a^2}\right)^{\frac{1}{4}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arccot(a*x^2),x)
```

```
[Out] x*arccot(a*x^2)+1/4/a/(1/a^2)^(1/4)*2^(1/2)*ln((x^2-(1/a^2)^(1/4)*x*2^(1/2)
+(1/a^2)^(1/2))/(x^2+(1/a^2)^(1/4)*x*2^(1/2)+(1/a^2)^(1/2)))+1/2/a/(1/a^2)^
(1/4)*2^(1/2)*arctan(2^(1/2)/(1/a^2)^(1/4)*x+1)+1/2/a/(1/a^2)^(1/4)*2^(1/2)
*arctan(2^(1/2)/(1/a^2)^(1/4)*x-1)
```

maxima [A] time = 0.41, size = 120, normalized size = 0.91

$$\frac{1}{4}a\left(\frac{2\sqrt{2}\arctan\left(\frac{\sqrt{2}\left(2ax+\sqrt{2}\sqrt{a}\right)}{2\sqrt{a}}\right)}{a^{\frac{3}{2}}}+\frac{2\sqrt{2}\arctan\left(\frac{\sqrt{2}\left(2ax-\sqrt{2}\sqrt{a}\right)}{2\sqrt{a}}\right)}{a^{\frac{3}{2}}}-\frac{\sqrt{2}\log\left(ax^2+\sqrt{2}\sqrt{a}\,x+1\right)}{a^{\frac{3}{2}}}+\frac{\sqrt{2}\log\left(ax\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(a*x^2),x, algorithm="maxima")
```

```
[Out] 1/4*a*(2*sqrt(2)*arctan(1/2*sqrt(2)*(2*a*x + sqrt(2)*sqrt(a))/sqrt(a))/a^(3
/2) + 2*sqrt(2)*arctan(1/2*sqrt(2)*(2*a*x - sqrt(2)*sqrt(a))/sqrt(a))/a^(3/
2) - sqrt(2)*log(a*x^2 + sqrt(2)*sqrt(a)*x + 1)/a^(3/2) + sqrt(2)*log(a*x^2
 - sqrt(2)*sqrt(a)*x + 1)/a^(3/2)) + x*arccot(a*x^2)
```

mupad [B] time = 0.13, size = 42, normalized size = 0.32

$$x\,\mathrm{acot}\left(a\,x^2\right)+\frac{{(-1)}^{1/4}\,\mathrm{atan}\left({(-1)}^{1/4}\,\sqrt{a}\,x\right)}{\sqrt{a}}-\frac{{(-1)}^{1/4}\,\mathrm{atanh}\left({(-1)}^{1/4}\,\sqrt{a}\,x\right)}{\sqrt{a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(acot(a*x^2),x)
```

```
[Out] x*acot(a*x^2) + ((-1)^(1/4)*atan((-1)^(1/4)*a^(1/2)*x))/a^(1/2) - ((-1)^(1/
4)*atanh((-1)^(1/4)*a^(1/2)*x))/a^(1/2)
```

sympy [A] time = 9.45, size = 139, normalized size = 1.05

$$\begin{cases} x\operatorname{acot}\left(ax^2\right) + \sqrt[4]{-1}\sqrt[4]{\frac{1}{a^2}}\operatorname{acot}\left(ax^2\right) - \frac{(-1)^{\frac{3}{4}}\log\left(x - \sqrt[4]{-1}\sqrt[4]{\frac{1}{a^2}}\right)}{a\sqrt[4]{\frac{1}{a^2}}} + \frac{(-1)^{\frac{3}{4}}\log\left(x^2 + i\sqrt{\frac{1}{a^2}}\right)}{2a\sqrt[4]{\frac{1}{a^2}}} + \frac{(-1)^{\frac{3}{4}}\operatorname{atan}\left(\frac{(-1)^{\frac{3}{4}}x}{\sqrt[4]{\frac{1}{a^2}}}\right)}{a\sqrt[4]{\frac{1}{a^2}}} & \text{for } a \neq 0 \\ \frac{\pi x}{2} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(acot(a*x**2),x)
```

```
[Out] Piecewise((x*acot(a*x**2) + (-1)**(1/4)*(a**(-2))**(1/4)*acot(a*x**2) - (-1
)**(3/4)*log(x - (-1)**(1/4)*(a**(-2))**(1/4))/(a*(a**(-2))**(1/4)) + (-1)*
*(3/4)*log(x**2 + I*sqrt(a**(-2)))/(2*a*(a**(-2))**(1/4)) + (-1)**(3/4)*ata
n((-1)**(3/4)*x/(a**(-2))**(1/4))/(a*(a**(-2))**(1/4)), Ne(a, 0)), (pi*x/2,
 True))
```

3.83 $\int \frac{\cot^{-1}(ax^2)}{x^2}\,dx$

Optimal. Leaf size=135

$$\frac{\sqrt{a}\log\left(ax^2-\sqrt{2}\sqrt{a}\,x+1\right)}{2\sqrt{2}}-\frac{\sqrt{a}\log\left(ax^2+\sqrt{2}\sqrt{a}\,x+1\right)}{2\sqrt{2}}-\frac{\cot^{-1}\left(ax^2\right)}{x}+\frac{\sqrt{a}\tan^{-1}\left(1-\sqrt{2}\sqrt{a}\,x\right)}{\sqrt{2}}-\frac{\sqrt{a}\tan^{-1}\left(\sqrt{\right.}}{\sqrt{2}}$$

```
[Out] -arccot(a*x^2)/x-1/2*arctan(-1+x*2^(1/2)*a^(1/2))*a^(1/2)*2^(1/2)-1/2*arcta
n(1+x*2^(1/2)*a^(1/2))*a^(1/2)*2^(1/2)+1/4*ln(1+a*x^2-x*2^(1/2)*a^(1/2))*a^
(1/2)*2^(1/2)-1/4*ln(1+a*x^2+x*2^(1/2)*a^(1/2))*a^(1/2)*2^(1/2)
```

Rubi [A] time = 0.08, antiderivative size = 135, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 7, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.700, Rules used = {5034, 211, 1165, 628, 1162, 617, 204}

$$\frac{\sqrt{a}\log\left(ax^2-\sqrt{2}\sqrt{a}\,x+1\right)}{2\sqrt{2}}-\frac{\sqrt{a}\log\left(ax^2+\sqrt{2}\sqrt{a}\,x+1\right)}{2\sqrt{2}}-\frac{\cot^{-1}\left(ax^2\right)}{x}+\frac{\sqrt{a}\tan^{-1}\left(1-\sqrt{2}\sqrt{a}\,x\right)}{\sqrt{2}}-\frac{\sqrt{a}\tan^{-1}\left(\sqrt{\right.}}{\sqrt{2}}$$

Antiderivative was successfully verified.

```
[In] Int[ArcCot[a*x^2]/x^2,x]
```

```
[Out] -(ArcCot[a*x^2]/x) + (Sqrt[a]*ArcTan[1 - Sqrt[2]*Sqrt[a]*x])/Sqrt[2] - (Sqr
t[a]*ArcTan[1 + Sqrt[2]*Sqrt[a]*x])/Sqrt[2] + (Sqrt[a]*Log[1 - Sqrt[2]*Sqrt
[a]*x + a*x^2])/(2*Sqrt[2]) - (Sqrt[a]*Log[1 + Sqrt[2]*Sqrt[a]*x + a*x^2])/
(2*Sqrt[2])
```

Rule 204

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

Rule 211

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

Rule 617

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

Rule 628

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

Rule 1162

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

```
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 1165

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

Rule 5034

```
Int[((a_.) + ArcCot[(c_.)*(x_)^(n_)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :
> Simp[((d*x)^(m + 1)*(a + b*ArcCot[c*x^n]))/(d*(m + 1)), x] + Dist[(b*c*n)
/(d*(m + 1)), Int[(x^(n - 1)*(d*x)^(m + 1))/(1 + c^2*x^(2*n)), x], x] /; Fr
eeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rubi steps

$$\int \frac{\cot^{-1}\left(ax^2\right)}{x^2}\,dx = -\frac{\cot^{-1}\left(ax^2\right)}{x} - (2a)\int \frac{1}{1+a^2x^4}\,dx$$
$$= -\frac{\cot^{-1}\left(ax^2\right)}{x} - a\int \frac{1-ax^2}{1+a^2x^4}\,dx - a\int \frac{1+ax^2}{1+a^2x^4}\,dx$$
$$= -\frac{\cot^{-1}\left(ax^2\right)}{x} - \frac{1}{2}\int \frac{1}{\frac{1}{a}-\frac{\sqrt{2}x}{\sqrt{a}}+x^2}\,dx - \frac{1}{2}\int \frac{1}{\frac{1}{a}+\frac{\sqrt{2}x}{\sqrt{a}}+x^2}\,dx + \frac{\sqrt{a}\int \frac{\frac{\sqrt{2}}{\sqrt{a}}+2x}{-\frac{1}{a}-\frac{\sqrt{2}x}{\sqrt{a}}-x^2}\,dx}{2\sqrt{2}} + \cdots$$
$$= -\frac{\cot^{-1}\left(ax^2\right)}{x} + \frac{\sqrt{a}\log\left(1-\sqrt{2}\sqrt{a}x+ax^2\right)}{2\sqrt{2}} - \frac{\sqrt{a}\log\left(1+\sqrt{2}\sqrt{a}x+ax^2\right)}{2\sqrt{2}} - \frac{\sqrt{a}\,\text{Subst}\cdots}{\cdots}$$
$$= -\frac{\cot^{-1}\left(ax^2\right)}{x} + \frac{\sqrt{a}\tan^{-1}\left(1-\sqrt{2}\sqrt{a}x\right)}{\sqrt{2}} - \frac{\sqrt{a}\tan^{-1}\left(1+\sqrt{2}\sqrt{a}x\right)}{\sqrt{2}} + \frac{\sqrt{a}\log\left(1-\sqrt{2}\sqrt{\cdots}\right.}{2\sqrt{2}}$$

Mathematica [A] time = 0.05, size = 105, normalized size = 0.78

$$\frac{\sqrt{a}\left(\log\left(ax^2-\sqrt{2}\sqrt{a}x+1\right)-\log\left(ax^2+\sqrt{2}\sqrt{a}x+1\right)+2\tan^{-1}\left(1-\sqrt{2}\sqrt{a}x\right)-2\tan^{-1}\left(\sqrt{2}\sqrt{a}x+1\right)\right)}{2\sqrt{2}} - \frac{\text{c}\cdots}{\cdots}$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcCot[a*x^2]/x^2,x]
```

```
[Out] -(ArcCot[a*x^2]/x) + (Sqrt[a]*(2*ArcTan[1 - Sqrt[2]*Sqrt[a]*x] - 2*ArcTan[1
 + Sqrt[2]*Sqrt[a]*x] + Log[1 - Sqrt[2]*Sqrt[a]*x + a*x^2] - Log[1 + Sqrt[2
]*Sqrt[a]*x + a*x^2]))/(2*Sqrt[2])
```

fricas [B] time = 1.53, size = 227, normalized size = 1.68

$$\frac{4\sqrt{2}\left(a^2\right)^{\frac{1}{4}}x\arctan\left(-\frac{\sqrt{2}\left(a^2\right)^{\frac{3}{4}}ax+a^2-\sqrt{2}\sqrt{a^2x^2+\sqrt{2}\left(a^2\right)^{\frac{1}{4}}ax+\sqrt{a^2}}\left(a^2\right)^{\frac{3}{4}}}{a^2}\right)+4\sqrt{2}\left(a^2\right)^{\frac{1}{4}}x\arctan\left(-\frac{\sqrt{2}\left(a^2\right)^{\frac{3}{4}}ax-a^2-\sqrt{2}\sqrt{a^2\cdots}}{\cdots}\right)\cdots}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(a*x^2)/x^2,x, algorithm="fricas")
```

```
[Out] 1/4*(4*sqrt(2)*(a^2)^(1/4)*x*arctan(-(sqrt(2)*(a^2)^(3/4)*a*x + a^2 - sqrt(
2)*sqrt(a^2*x^2 + sqrt(2)*(a^2)^(1/4)*a*x + sqrt(a^2))*(a^2)^(3/4))/a^2) +
4*sqrt(2)*(a^2)^(1/4)*x*arctan(-(sqrt(2)*(a^2)^(3/4)*a*x - a^2 - sqrt(2)*sq
rt(a^2*x^2 - sqrt(2)*(a^2)^(1/4)*a*x + sqrt(a^2))*(a^2)^(3/4))/a^2) - sqrt(
2)*(a^2)^(1/4)*x*log(a^2*x^2 + sqrt(2)*(a^2)^(1/4)*a*x + sqrt(a^2)) + sqrt(
2)*(a^2)^(1/4)*x*log(a^2*x^2 - sqrt(2)*(a^2)^(1/4)*a*x + sqrt(a^2)) - 4*arc
tan(1/(a*x^2)))/x
```

giac [A] time = 0.14, size = 135, normalized size = 1.00

$$-\frac{1}{4}a\left(\frac{2\sqrt{2}\arctan\left(\frac{1}{2}\sqrt{2}\left(2x+\frac{\sqrt{2}}{\sqrt{|a|}}\right)\sqrt{|a|}\right)}{\sqrt{|a|}}+\frac{2\sqrt{2}\arctan\left(\frac{1}{2}\sqrt{2}\left(2x-\frac{\sqrt{2}}{\sqrt{|a|}}\right)\sqrt{|a|}\right)}{\sqrt{|a|}}+\frac{\sqrt{2}\log\left(x^2+\frac{\sqrt{2}x}{\sqrt{|a|}}+\frac{1}{|a|}\right)}{\sqrt{|a|}}-\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(a*x^2)/x^2,x, algorithm="giac")
```

```
[Out] -1/4*a*(2*sqrt(2)*arctan(1/2*sqrt(2)*(2*x + sqrt(2)/sqrt(abs(a)))*sqrt(abs(
a)))/sqrt(abs(a)) + 2*sqrt(2)*arctan(1/2*sqrt(2)*(2*x - sqrt(2)/sqrt(abs(a)
))*sqrt(abs(a)))/sqrt(abs(a)) + sqrt(2)*log(x^2 + sqrt(2)*x/sqrt(abs(a)) +
1/abs(a))/sqrt(abs(a)) - sqrt(2)*log(x^2 - sqrt(2)*x/sqrt(abs(a)) + 1/abs(a
))/sqrt(abs(a))) - arctan(1/(a*x^2))/x
```

maple [A] time = 0.04, size = 115, normalized size = 0.85

$$-\frac{\operatorname{arccot}\left(a x^2\right)}{x}-\frac{a\left(\frac{1}{a^2}\right)^{\frac{1}{4}}\sqrt{2}\ \arctan\left(\frac{\sqrt{2}\,x}{\left(\frac{1}{a^2}\right)^{\frac{1}{4}}}+1\right)}{2}-\frac{a\left(\frac{1}{a^2}\right)^{\frac{1}{4}}\sqrt{2}\ \ln\left(\frac{x^2+\left(\frac{1}{a^2}\right)^{\frac{1}{4}}x\sqrt{2}+\sqrt{\frac{1}{a^2}}}{x^2-\left(\frac{1}{a^2}\right)^{\frac{1}{4}}x\sqrt{2}+\sqrt{\frac{1}{a^2}}}\right)}{4}-\frac{a\left(\frac{1}{a^2}\right)^{\frac{1}{4}}\sqrt{2}\ \arctan\left(\frac{\sqrt{2}\,x}{\left(\frac{1}{a^2}\right)^{\frac{1}{4}}}-\right.}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arccot(a*x^2)/x^2,x)
```

```
[Out] -arccot(a*x^2)/x-1/2*a*(1/a^2)^(1/4)*2^(1/2)*arctan(2^(1/2)/(1/a^2)^(1/4)*x
+1)-1/4*a*(1/a^2)^(1/4)*2^(1/2)*ln((x^2+(1/a^2)^(1/4)*x*2^(1/2)+(1/a^2)^(1/
2))/(x^2-(1/a^2)^(1/4)*x*2^(1/2)+(1/a^2)^(1/2)))-1/2*a*(1/a^2)^(1/4)*2^(1/2
)*arctan(2^(1/2)/(1/a^2)^(1/4)*x-1)
```

maxima [A] time = 0.41, size = 123, normalized size = 0.91

$$-\frac{1}{4}a\left(\frac{2\sqrt{2}\arctan\left(\frac{\sqrt{2}\left(2ax+\sqrt{2}\sqrt{a}\right)}{2\sqrt{a}}\right)}{\sqrt{a}}+\frac{2\sqrt{2}\arctan\left(\frac{\sqrt{2}\left(2ax-\sqrt{2}\sqrt{a}\right)}{2\sqrt{a}}\right)}{\sqrt{a}}+\frac{\sqrt{2}\log\left(ax^2+\sqrt{2}\sqrt{a}x+1\right)}{\sqrt{a}}-\frac{\sqrt{2}\log\left(a\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(a*x^2)/x^2,x, algorithm="maxima")
```

```
[Out] -1/4*a*(2*sqrt(2)*arctan(1/2*sqrt(2)*(2*a*x + sqrt(2)*sqrt(a))/sqrt(a))/sqr
t(a) + 2*sqrt(2)*arctan(1/2*sqrt(2)*(2*a*x - sqrt(2)*sqrt(a))/sqrt(a))/sqrt
(a) + sqrt(2)*log(a*x^2 + sqrt(2)*sqrt(a)*x + 1)/sqrt(a) - sqrt(2)*log(a*x^
2 - sqrt(2)*sqrt(a)*x + 1)/sqrt(a)) - arccot(a*x^2)/x
```

mupad [B] time = 0.68, size = 44, normalized size = 0.33

$$-\frac{\operatorname{acot}\left(a x^2\right)}{x}+(-1)^{1/4}\sqrt{a}\ \operatorname{atan}\left((-1)^{1/4}\sqrt{a}\ x\right)1\mathrm{i}+(-1)^{1/4}\sqrt{a}\ \operatorname{atanh}\left((-1)^{1/4}\sqrt{a}\ x\right)1\mathrm{i}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(acot(a*x^2)/x^2,x)
```

```
[Out] (-1)^(1/4)*a^(1/2)*atan((-1)^(1/4)*a^(1/2)*x)*1i - acot(a*x^2)/x + (-1)^(1/
4)*a^(1/2)*atanh((-1)^(1/4)*a^(1/2)*x)*1i
```

sympy [A] time = 19.96, size = 144, normalized size = 1.07

$$\begin{cases} (-1)^{\frac{3}{4}} a^2 \left(\frac{1}{a^2}\right)^{\frac{3}{4}} \operatorname{acot}\left(ax^2\right) + \sqrt[4]{-1}\, a \sqrt[4]{\frac{1}{a^2}} \log\left(x - \sqrt[4]{-1} \sqrt[4]{\frac{1}{a^2}}\right) - \frac{\sqrt[4]{-1}\, a \sqrt[4]{\frac{1}{a^2}} \log\left(x^2 + i\sqrt{\frac{1}{a^2}}\right)}{2} + \sqrt[4]{-1}\, a \sqrt[4]{\frac{1}{a^2}} \operatorname{atan}\left(\frac{(-1)^{\frac{3}{4}}}{\sqrt[4]{\frac{1}{a^2}}}\right. \\ -\frac{\pi}{2x} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(acot(a*x**2)/x**2,x)
```

```
[Out] Piecewise((((-1)**(3/4)*a**2*(a**(-2))**(3/4)*acot(a*x**2) + (-1)**(1/4)*a*(
a**(-2))**(1/4)*log(x - (-1)**(1/4)*(a**(-2))**(1/4)) - (-1)**(1/4)*a*(a**(
-2))**(1/4)*log(x**2 + I*sqrt(a**(-2)))/2 + (-1)**(1/4)*a*(a**(-2))**(1/4)*
atan((-1)**(3/4)*x/(a**(-2))**(1/4)) - acot(a*x**2)/x, Ne(a, 0)), (-pi/(2*x
), True))
```

3.84 $\int \frac{\cot^{-1}(ax^2)}{x^4}\,dx$

Optimal. Leaf size=150

$$\frac{a^{3/2}\log\left(ax^2-\sqrt{2}\sqrt{a}x+1\right)}{6\sqrt{2}}-\frac{a^{3/2}\log\left(ax^2+\sqrt{2}\sqrt{a}x+1\right)}{6\sqrt{2}}-\frac{a^{3/2}\tan^{-1}\left(1-\sqrt{2}\sqrt{a}x\right)}{3\sqrt{2}}+\frac{a^{3/2}\tan^{-1}\left(\sqrt{2}\sqrt{a}x+1\right)}{3\sqrt{2}}-$$

```
[Out] 2/3*a/x-1/3*arccot(a*x^2)/x^3+1/6*a^(3/2)*arctan(-1+x*2^(1/2)*a^(1/2))*2^(1
/2)+1/6*a^(3/2)*arctan(1+x*2^(1/2)*a^(1/2))*2^(1/2)+1/12*a^(3/2)*ln(1+a*x^2
-x*2^(1/2)*a^(1/2))*2^(1/2)-1/12*a^(3/2)*ln(1+a*x^2+x*2^(1/2)*a^(1/2))*2^(1
/2)
```

Rubi [A] time = 0.09, antiderivative size = 150, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 8, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.800, Rules used = {5034, 325, 297, 1162, 617, 204, 1165, 628}

$$\frac{a^{3/2}\log\left(ax^2-\sqrt{2}\sqrt{a}x+1\right)}{6\sqrt{2}}-\frac{a^{3/2}\log\left(ax^2+\sqrt{2}\sqrt{a}x+1\right)}{6\sqrt{2}}-\frac{a^{3/2}\tan^{-1}\left(1-\sqrt{2}\sqrt{a}x\right)}{3\sqrt{2}}+\frac{a^{3/2}\tan^{-1}\left(\sqrt{2}\sqrt{a}x+1\right)}{3\sqrt{2}}-$$

Antiderivative was successfully verified.

```
[In] Int[ArcCot[a*x^2]/x^4,x]
```

```
[Out] (2*a)/(3*x) - ArcCot[a*x^2]/(3*x^3) - (a^(3/2)*ArcTan[1 - Sqrt[2]*Sqrt[a]*x
])/(3*Sqrt[2]) + (a^(3/2)*ArcTan[1 + Sqrt[2]*Sqrt[a]*x])/(3*Sqrt[2]) + (a^(
3/2)*Log[1 - Sqrt[2]*Sqrt[a]*x + a*x^2])/(6*Sqrt[2]) - (a^(3/2)*Log[1 + Sqr
t[2]*Sqrt[a]*x + a*x^2])/(6*Sqrt[2])
```

Rule 204

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

Rule 297

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

Rule 325

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

Rule 617

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

Rule 628

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

Rule 1162

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

Rule 1165

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

Rule 5034

```
Int[((a_.) + ArcCot[(c_.)*(x_)^(n_)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :
> Simp[((d*x)^(m + 1)*(a + b*ArcCot[c*x^n]))/(d*(m + 1)), x] + Dist[(b*c*n)
/(d*(m + 1)), Int[(x^(n - 1)*(d*x)^(m + 1))/(1 + c^2*x^(2*n)), x], x] /; Fr
eeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rubi steps

$$\begin{aligned}
\int \frac{\cot^{-1}\left(ax^2\right)}{x^4}\,dx &= -\frac{\cot^{-1}\left(ax^2\right)}{3x^3} - \frac{1}{3}(2a)\int \frac{1}{x^2\left(1+a^2x^4\right)}\,dx \\
&= \frac{2a}{3x} - \frac{\cot^{-1}\left(ax^2\right)}{3x^3} + \frac{1}{3}\left(2a^3\right)\int \frac{x^2}{1+a^2x^4}\,dx \\
&= \frac{2a}{3x} - \frac{\cot^{-1}\left(ax^2\right)}{3x^3} - \frac{1}{3}a^2\int \frac{1-ax^2}{1+a^2x^4}\,dx + \frac{1}{3}a^2\int \frac{1+ax^2}{1+a^2x^4}\,dx \\
&= \frac{2a}{3x} - \frac{\cot^{-1}\left(ax^2\right)}{3x^3} + \frac{1}{6}a\int \frac{1}{\frac{1}{a}-\frac{\sqrt{2}x}{\sqrt{a}}+x^2}\,dx + \frac{1}{6}a\int \frac{1}{\frac{1}{a}+\frac{\sqrt{2}x}{\sqrt{a}}+x^2}\,dx + \frac{a^{3/2}\int \frac{\frac{\sqrt{2}}{\sqrt{a}}+2x}{-\frac{1}{a}-\frac{\sqrt{2}x}{\sqrt{a}}-x^2}\,\ldots}{6\sqrt{2}} \\
&= \frac{2a}{3x} - \frac{\cot^{-1}\left(ax^2\right)}{3x^3} + \frac{a^{3/2}\log\left(1-\sqrt{2}\sqrt{a}\,x+ax^2\right)}{6\sqrt{2}} - \frac{a^{3/2}\log\left(1+\sqrt{2}\sqrt{a}\,x+ax^2\right)}{6\sqrt{2}} + \frac{a^{3/2}\,\mathrm{Su}\ldots}{\ldots} \\
&= \frac{2a}{3x} - \frac{\cot^{-1}\left(ax^2\right)}{3x^3} - \frac{a^{3/2}\tan^{-1}\left(1-\sqrt{2}\sqrt{a}\,x\right)}{3\sqrt{2}} + \frac{a^{3/2}\tan^{-1}\left(1+\sqrt{2}\sqrt{a}\,x\right)}{3\sqrt{2}} + \frac{a^{3/2}\log\left(1-\ldots\right.}{6\ldots}
\end{aligned}$$

Mathematica [A] time = 0.06, size = 146, normalized size = 0.97

$$\frac{ax^2\left(\sqrt{2}\sqrt{a}\,x\log\left(ax^2-\sqrt{2}\sqrt{a}\,x+1\right)-\sqrt{2}\sqrt{a}\,x\log\left(ax^2+\sqrt{2}\sqrt{a}\,x+1\right)-2\sqrt{2}\sqrt{a}\,x\tan^{-1}\left(1-\sqrt{2}\sqrt{a}\,x\right)+2\ldots\right.}{12x^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcCot[a*x^2]/x^4,x]
```

```
[Out] (-4*ArcCot[a*x^2] + a*x^2*(8 - 2*Sqrt[2]*Sqrt[a]*x*ArcTan[1 - Sqrt[2]*Sqrt[
a]*x] + 2*Sqrt[2]*Sqrt[a]*x*ArcTan[1 + Sqrt[2]*Sqrt[a]*x] + Sqrt[2]*Sqrt[a]
```

```
*x*Log[1 - Sqrt[2]*Sqrt[a]*x + a*x^2] - Sqrt[2]*Sqrt[a]*x*Log[1 + Sqrt[2]*S
qrt[a]*x + a*x^2]))/(12*x^3)
```

fricas [B] time = 1.04, size = 269, normalized size = 1.79

$$-\frac{4\sqrt{2}\left(a^6\right)^{\frac{1}{4}}x^3\arctan\left(-\frac{\sqrt{2}\left(a^6\right)^{\frac{1}{4}}a^5x+a^6-\sqrt{2}\sqrt{a^{10}x^2+\sqrt{2}\left(a^6\right)^{\frac{3}{4}}a^5x+\sqrt{a^6}\,a^6}\left(a^6\right)^{\frac{1}{4}}}{a^6}\right)+4\sqrt{2}\left(a^6\right)^{\frac{1}{4}}x^3\arctan\left(-\frac{\sqrt{2}\left(a^6\right)^{\frac{1}{4}}a^5x-a^6-\sqrt{}}{}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(a*x^2)/x^4,x, algorithm="fricas")
```

```
[Out] -1/12*(4*sqrt(2)*(a^6)^(1/4)*x^3*arctan(-(sqrt(2)*(a^6)^(1/4)*a^5*x + a^6 -
 sqrt(2)*sqrt(a^10*x^2 + sqrt(2)*(a^6)^(3/4)*a^5*x + sqrt(a^6)*a^6)*(a^6)^(
1/4))/a^6) + 4*sqrt(2)*(a^6)^(1/4)*x^3*arctan(-(sqrt(2)*(a^6)^(1/4)*a^5*x -
 a^6 - sqrt(2)*sqrt(a^10*x^2 - sqrt(2)*(a^6)^(3/4)*a^5*x + sqrt(a^6)*a^6)*(
a^6)^(1/4))/a^6) + sqrt(2)*(a^6)^(1/4)*x^3*log(a^10*x^2 + sqrt(2)*(a^6)^(3/
4)*a^5*x + sqrt(a^6)*a^6) - sqrt(2)*(a^6)^(1/4)*x^3*log(a^10*x^2 - sqrt(2)*
(a^6)^(3/4)*a^5*x + sqrt(a^6)*a^6) - 8*a*x^2 + 4*arctan(1/(a*x^2)))/x^3
```

giac [A] time = 0.13, size = 149, normalized size = 0.99

$$\frac{1}{12}\left(\frac{2\sqrt{2}\,a^2\arctan\left(\frac{1}{2}\sqrt{2}\left(2x+\frac{\sqrt{2}}{\sqrt{|a|}}\right)\sqrt{|a|}\right)}{|a|^{\frac{3}{2}}}+\frac{2\sqrt{2}\,a^2\arctan\left(\frac{1}{2}\sqrt{2}\left(2x-\frac{\sqrt{2}}{\sqrt{|a|}}\right)\sqrt{|a|}\right)}{|a|^{\frac{3}{2}}}-\sqrt{2}\sqrt{|a|}\log\left(x^2+\frac{\sqrt{2}x}{\sqrt{|a|}}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(a*x^2)/x^4,x, algorithm="giac")
```

```
[Out] 1/12*(2*sqrt(2)*a^2*arctan(1/2*sqrt(2)*(2*x + sqrt(2)/sqrt(abs(a)))*sqrt(ab
s(a)))/abs(a)^(3/2) + 2*sqrt(2)*a^2*arctan(1/2*sqrt(2)*(2*x - sqrt(2)/sqrt(
abs(a)))*sqrt(abs(a)))/abs(a)^(3/2) - sqrt(2)*sqrt(abs(a))*log(x^2 + sqrt(2
)*x/sqrt(abs(a)) + 1/abs(a)) + sqrt(2)*a^2*log(x^2 - sqrt(2)*x/sqrt(abs(a))
 + 1/abs(a))/abs(a)^(3/2) + 8/x)*a - 1/3*arctan(1/(a*x^2))/x^3
```

maple [A] time = 0.04, size = 121, normalized size = 0.81

$$-\frac{\operatorname{arccot}\left(a\,x^2\right)}{3x^3}+\frac{a\sqrt{2}\,\ln\left(\frac{x^2-\left(\frac{1}{a^2}\right)^{\frac{1}{4}}x\sqrt{2}+\sqrt{\frac{1}{a^2}}}{x^2+\left(\frac{1}{a^2}\right)^{\frac{1}{4}}x\sqrt{2}+\sqrt{\frac{1}{a^2}}}\right)}{12\left(\frac{1}{a^2}\right)^{\frac{1}{4}}}+\frac{a\sqrt{2}\,\arctan\left(\frac{\sqrt{2}\,x}{\left(\frac{1}{a^2}\right)^{\frac{1}{4}}}+1\right)}{6\left(\frac{1}{a^2}\right)^{\frac{1}{4}}}+\frac{a\sqrt{2}\,\arctan\left(\frac{\sqrt{2}\,x}{\left(\frac{1}{a^2}\right)^{\frac{1}{4}}}-1\right)}{6\left(\frac{1}{a^2}\right)^{\frac{1}{4}}}+\frac{2a}{3x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arccot(a*x^2)/x^4,x)
```

```
[Out] -1/3*arccot(a*x^2)/x^3+1/12*a/(1/a^2)^(1/4)*2^(1/2)*ln((x^2-(1/a^2)^(1/4)*x
*2^(1/2)+(1/a^2)^(1/2))/(x^2+(1/a^2)^(1/4)*x*2^(1/2)+(1/a^2)^(1/2)))+1/6*a/
(1/a^2)^(1/4)*2^(1/2)*arctan(2^(1/2)/(1/a^2)^(1/4)*x+1)+1/6*a/(1/a^2)^(1/4)
*2^(1/2)*arctan(2^(1/2)/(1/a^2)^(1/4)*x-1)+2/3*a/x
```

maxima [A] time = 0.41, size = 133, normalized size = 0.89

$$\frac{1}{12}\left(a^2\left(\frac{2\sqrt{2}\,\arctan\left(\frac{\sqrt{2}\left(2\,ax+\sqrt{2}\,\sqrt{a}\right)}{2\,\sqrt{a}}\right)}{a^{\frac{3}{2}}}+\frac{2\sqrt{2}\,\arctan\left(\frac{\sqrt{2}\left(2\,ax-\sqrt{2}\,\sqrt{a}\right)}{2\,\sqrt{a}}\right)}{a^{\frac{3}{2}}}-\frac{\sqrt{2}\,\log\left(ax^2+\sqrt{2}\,\sqrt{a}\,x+1\right)}{a^{\frac{3}{2}}}+\frac{\sqrt{2}\,\log\left(\right.}{}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(a*x^2)/x^4,x, algorithm="maxima")
```

```
[Out] 1/12*(a^2*(2*sqrt(2)*arctan(1/2*sqrt(2)*(2*a*x + sqrt(2)*sqrt(a))/sqrt(a))/
a^(3/2) + 2*sqrt(2)*arctan(1/2*sqrt(2)*(2*a*x - sqrt(2)*sqrt(a))/sqrt(a))/a
^(3/2) - sqrt(2)*log(a*x^2 + sqrt(2)*sqrt(a)*x + 1)/a^(3/2) + sqrt(2)*log(a
*x^2 - sqrt(2)*sqrt(a)*x + 1)/a^(3/2)) + 8/x)*a - 1/3*arccot(a*x^2)/x^3
```

mupad [B] time = 0.71, size = 52, normalized size = 0.35

$$\frac{2\,a}{3\,x}-\frac{\mathrm{acot}\left(a\,x^2\right)}{3\,x^3}+\frac{{\left(-1\right)}^{1/4}\,a^{3/2}\,\mathrm{atan}\left({\left(-1\right)}^{1/4}\,\sqrt{a}\,x\right)}{3}+\frac{{\left(-1\right)}^{1/4}\,a^{3/2}\,\mathrm{atan}\left({\left(-1\right)}^{1/4}\,\sqrt{a}\,x\,1{}\mathrm{i}\right)\,1{}\mathrm{i}}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(acot(a*x^2)/x^4,x)
```

```
[Out] (2*a)/(3*x) - acot(a*x^2)/(3*x^3) + ((-1)^(1/4)*a^(3/2)*atan((-1)^(1/4)*a^(
1/2)*x))/3 + ((-1)^(1/4)*a^(3/2)*atan((-1)^(1/4)*a^(1/2)*x*1i)*1i)/3
```

sympy [A] time = 37.99, size = 162, normalized size = 1.08

$$\begin{cases} \frac{\sqrt[4]{-1}\,a^2\sqrt[4]{\frac{1}{a^2}}\,\mathrm{acot}\left(ax^2\right)}{3}-\frac{(-1)^{\frac{3}{4}}a\log\left(x-\sqrt[4]{-1}\sqrt[4]{\frac{1}{a^2}}\right)}{3\sqrt[4]{\frac{1}{a^2}}}+\frac{(-1)^{\frac{3}{4}}a\log\left(x^2+i\sqrt{\frac{1}{a^2}}\right)}{6\sqrt[4]{\frac{1}{a^2}}}+\frac{(-1)^{\frac{3}{4}}a\,\mathrm{atan}\left(\frac{(-1)^{\frac{3}{4}}x}{\sqrt[4]{\frac{1}{a^2}}}\right)}{3\sqrt[4]{\frac{1}{a^2}}}+\frac{2a}{3x}-\frac{\mathrm{acot}\left(ax^2\right)}{3x^3} & \text{for } a \neq \\ -\frac{\pi}{6x^3} & \text{otherw} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(acot(a*x**2)/x**4,x)
```

```
[Out] Piecewise(((-1)**(1/4)*a**2*(a**(-2))**(1/4)*acot(a*x**2)/3 - (-1)**(3/4)*a
*log(x - (-1)**(1/4)*(a**(-2))**(1/4))/(3*(a**(-2))**(1/4)) + (-1)**(3/4)*a
*log(x**2 + I*sqrt(a**(-2)))/(6*(a**(-2))**(1/4)) + (-1)**(3/4)*a*atan((-1)
**(3/4)*x/(a**(-2))**(1/4))/(3*(a**(-2))**(1/4)) + 2*a/(3*x) - acot(a*x**2)
/(3*x**3), Ne(a, 0)), (-pi/(6*x**3), True))
```

3.85 $\int x^2 \cot^{-1}\left(\sqrt{x}\right) dx$

Optimal. Leaf size=51

$$\frac{x^{5/2}}{15} - \frac{x^{3/2}}{9} + \frac{1}{3}x^3 \cot^{-1}\left(\sqrt{x}\right) + \frac{\sqrt{x}}{3} - \frac{1}{3}\tan^{-1}\left(\sqrt{x}\right)$$

```
[Out] -1/9*x^(3/2)+1/15*x^(5/2)+1/3*x^3*arccot(x^(1/2))-1/3*arctan(x^(1/2))+1/3*x
^(1/2)
```

Rubi [A] time = 0.01, antiderivative size = 51, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.400, Rules used = {5034, 50, 63, 203}

$$\frac{x^{5/2}}{15} - \frac{x^{3/2}}{9} + \frac{1}{3}x^3 \cot^{-1}\left(\sqrt{x}\right) + \frac{\sqrt{x}}{3} - \frac{1}{3}\tan^{-1}\left(\sqrt{x}\right)$$

Antiderivative was successfully verified.

```
[In] Int[x^2*ArcCot[Sqrt[x]],x]
```

```
[Out] Sqrt[x]/3 - x^(3/2)/9 + x^(5/2)/15 + (x^3*ArcCot[Sqrt[x]])/3 - ArcTan[Sqrt[
x]]/3
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] && !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) && !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 203

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

Rule 5034

```
Int[((a_.) + ArcCot[(c_.)*(x_)^(n_)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :
> Simp[((d*x)^(m + 1)*(a + b*ArcCot[c*x^n]))/(d*(m + 1)), x] + Dist[(b*c*n)
/(d*(m + 1)), Int[(x^(n - 1)*(d*x)^(m + 1))/(1 + c^2*x^(2*n)), x], x] /; Fr
eeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rubi steps

$$
\begin{aligned}
\int x^2 \cot^{-1}\left(\sqrt{x}\right) dx &= \frac{1}{3}x^3 \cot^{-1}\left(\sqrt{x}\right) + \frac{1}{6}\int \frac{x^{5/2}}{1+x} dx \\
&= \frac{x^{5/2}}{15} + \frac{1}{3}x^3 \cot^{-1}\left(\sqrt{x}\right) - \frac{1}{6}\int \frac{x^{3/2}}{1+x} dx \\
&= -\frac{x^{3/2}}{9} + \frac{x^{5/2}}{15} + \frac{1}{3}x^3 \cot^{-1}\left(\sqrt{x}\right) + \frac{1}{6}\int \frac{\sqrt{x}}{1+x} dx \\
&= \frac{\sqrt{x}}{3} - \frac{x^{3/2}}{9} + \frac{x^{5/2}}{15} + \frac{1}{3}x^3 \cot^{-1}\left(\sqrt{x}\right) - \frac{1}{6}\int \frac{1}{\sqrt{x}(1+x)} dx \\
&= \frac{\sqrt{x}}{3} - \frac{x^{3/2}}{9} + \frac{x^{5/2}}{15} + \frac{1}{3}x^3 \cot^{-1}\left(\sqrt{x}\right) - \frac{1}{3}\text{Subst}\left(\int \frac{1}{1+x^2} dx, x, \sqrt{x}\right) \\
&= \frac{\sqrt{x}}{3} - \frac{x^{3/2}}{9} + \frac{x^{5/2}}{15} + \frac{1}{3}x^3 \cot^{-1}\left(\sqrt{x}\right) - \frac{1}{3}\tan^{-1}\left(\sqrt{x}\right)
\end{aligned}
$$

Mathematica [A] time = 0.02, size = 40, normalized size = 0.78

$$\frac{1}{45}\left(15x^3 \cot^{-1}\left(\sqrt{x}\right) + \left(3x^2 - 5x + 15\right)\sqrt{x} - 15\tan^{-1}\left(\sqrt{x}\right)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*ArcCot[Sqrt[x]],x]
[Out] (Sqrt[x]*(15 - 5*x + 3*x^2) + 15*x^3*ArcCot[Sqrt[x]] - 15*ArcTan[Sqrt[x]])/
45
```

fricas [A] time = 1.39, size = 27, normalized size = 0.53

$$\frac{1}{3}\left(x^3 + 1\right)\operatorname{arccot}\left(\sqrt{x}\right) + \frac{1}{45}\left(3x^2 - 5x + 15\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*arccot(x^(1/2)),x, algorithm="fricas")
[Out] 1/3*(x^3 + 1)*arccot(sqrt(x)) + 1/45*(3*x^2 - 5*x + 15)*sqrt(x)
```

giac [A] time = 0.12, size = 33, normalized size = 0.65

$$\frac{1}{3}x^3 \arctan\left(\frac{1}{\sqrt{x}}\right) - \frac{1}{45}x^{\frac{5}{2}}\left(\frac{5}{x} - \frac{15}{x^2} - 3\right) + \frac{1}{3}\arctan\left(\frac{1}{\sqrt{x}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*arccot(x^(1/2)),x, algorithm="giac")
[Out] 1/3*x^3*arctan(1/sqrt(x)) - 1/45*x^(5/2)*(5/x - 15/x^2 - 3) + 1/3*arctan(1/
sqrt(x))
```

maple [A] time = 0.04, size = 32, normalized size = 0.63

$$-\frac{x^{\frac{3}{2}}}{9} + \frac{x^{\frac{5}{2}}}{15} + \frac{x^3 \operatorname{arccot}\left(\sqrt{x}\right)}{3} - \frac{\arctan\left(\sqrt{x}\right)}{3} + \frac{\sqrt{x}}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*arccot(x^(1/2)),x)
```

```
[Out] -1/9*x^(3/2)+1/15*x^(5/2)+1/3*x^3*arccot(x^(1/2))-1/3*arctan(x^(1/2))+1/3*x
^(1/2)
```

maxima [A] time = 0.56, size = 31, normalized size = 0.61

$$\frac{1}{3}\,x^{3}\operatorname{arccot}\left(\sqrt{x}\right)+\frac{1}{15}\,x^{\frac{5}{2}}-\frac{1}{9}\,x^{\frac{3}{2}}+\frac{1}{3}\,\sqrt{x}-\frac{1}{3}\,\arctan\left(\sqrt{x}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*arccot(x^(1/2)),x, algorithm="maxima")
```

```
[Out] 1/3*x^3*arccot(sqrt(x)) + 1/15*x^(5/2) - 1/9*x^(3/2) + 1/3*sqrt(x) - 1/3*ar
ctan(sqrt(x))
```

mupad [B] time = 0.65, size = 31, normalized size = 0.61

$$\frac{x^{3}\operatorname{acot}\left(\sqrt{x}\right)}{3}-\frac{\operatorname{atan}\left(\sqrt{x}\right)}{3}+\frac{\sqrt{x}}{3}-\frac{x^{3/2}}{9}+\frac{x^{5/2}}{15}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*acot(x^(1/2)),x)
```

```
[Out] (x^3*acot(x^(1/2)))/3 - atan(x^(1/2))/3 + x^(1/2)/3 - x^(3/2)/9 + x^(5/2)/1
5
```

sympy [A] time = 2.00, size = 39, normalized size = 0.76

$$\frac{x^{\frac{5}{2}}}{15}-\frac{x^{\frac{3}{2}}}{9}+\frac{\sqrt{x}}{3}+\frac{x^{3}\operatorname{acot}\left(\sqrt{x}\right)}{3}-\frac{\operatorname{atan}\left(\sqrt{x}\right)}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*acot(x**(1/2)),x)
```

```
[Out] x**(5/2)/15 - x**(3/2)/9 + sqrt(x)/3 + x**3*acot(sqrt(x))/3 - atan(sqrt(x))
/3
```

3.86 $\int x \cot^{-1}\left(\sqrt{x}\right) dx$

Optimal. Leaf size=42

$$\frac{x^{3/2}}{6}+\frac{1}{2}x^2\cot^{-1}\left(\sqrt{x}\right)-\frac{\sqrt{x}}{2}+\frac{1}{2}\tan^{-1}\left(\sqrt{x}\right)$$

```
[Out] 1/6*x^(3/2)+1/2*x^2*arccot(x^(1/2))+1/2*arctan(x^(1/2))-1/2*x^(1/2)
```

Rubi [A] time = 0.01, antiderivative size = 42, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 8, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.500, Rules used = {5034, 50, 63, 203}

$$\frac{x^{3/2}}{6}+\frac{1}{2}x^2\cot^{-1}\left(\sqrt{x}\right)-\frac{\sqrt{x}}{2}+\frac{1}{2}\tan^{-1}\left(\sqrt{x}\right)$$

Antiderivative was successfully verified.

```
[In] Int[x*ArcCot[Sqrt[x]],x]
```

```
[Out] -Sqrt[x]/2 + x^(3/2)/6 + (x^2*ArcCot[Sqrt[x]])/2 + ArcTan[Sqrt[x]]/2
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 203

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

Rule 5034

```
Int[((a_.) + ArcCot[(c_.)*(x_)^(n_)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :
> Simp[((d*x)^(m + 1)*(a + b*ArcCot[c*x^n]))/(d*(m + 1)), x] + Dist[(b*c*n)
/(d*(m + 1)), Int[(x^(n - 1)*(d*x)^(m + 1))/(1 + c^2*x^(2*n)), x], x] /; Fr
eeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rubi steps

$$
\begin{aligned}
\int x \cot^{-1}\left(\sqrt{x}\right) dx &= \frac{1}{2}x^2 \cot^{-1}\left(\sqrt{x}\right) + \frac{1}{4}\int \frac{x^{3/2}}{1+x} dx \\
&= \frac{x^{3/2}}{6} + \frac{1}{2}x^2 \cot^{-1}\left(\sqrt{x}\right) - \frac{1}{4}\int \frac{\sqrt{x}}{1+x} dx \\
&= -\frac{\sqrt{x}}{2} + \frac{x^{3/2}}{6} + \frac{1}{2}x^2 \cot^{-1}\left(\sqrt{x}\right) + \frac{1}{4}\int \frac{1}{\sqrt{x}(1+x)} dx \\
&= -\frac{\sqrt{x}}{2} + \frac{x^{3/2}}{6} + \frac{1}{2}x^2 \cot^{-1}\left(\sqrt{x}\right) + \frac{1}{2}\operatorname{Subst}\left(\int \frac{1}{1+x^2} dx, x, \sqrt{x}\right) \\
&= -\frac{\sqrt{x}}{2} + \frac{x^{3/2}}{6} + \frac{1}{2}x^2 \cot^{-1}\left(\sqrt{x}\right) + \frac{1}{2}\tan^{-1}\left(\sqrt{x}\right)
\end{aligned}
$$

Mathematica [A] time = 0.01, size = 33, normalized size = 0.79

$$\frac{1}{6}\left(3x^2 \cot^{-1}\left(\sqrt{x}\right) + (x-3)\sqrt{x} + 3\tan^{-1}\left(\sqrt{x}\right)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[x*ArcCot[Sqrt[x]],x]
[Out] ((-3 + x)*Sqrt[x] + 3*x^2*ArcCot[Sqrt[x]] + 3*ArcTan[Sqrt[x]])/6
```

fricas [A] time = 0.63, size = 20, normalized size = 0.48

$$\frac{1}{2}\left(x^2 - 1\right)\operatorname{arccot}\left(\sqrt{x}\right) + \frac{1}{6}(x-3)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*arccot(x^(1/2)),x, algorithm="fricas")
[Out] 1/2*(x^2 - 1)*arccot(sqrt(x)) + 1/6*(x - 3)*sqrt(x)
```

giac [A] time = 0.14, size = 28, normalized size = 0.67

$$\frac{1}{2}x^2 \arctan\left(\frac{1}{\sqrt{x}}\right) - \frac{1}{6}x^{\frac{3}{2}}\left(\frac{3}{x} - 1\right) - \frac{1}{2}\arctan\left(\frac{1}{\sqrt{x}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*arccot(x^(1/2)),x, algorithm="giac")
[Out] 1/2*x^2*arctan(1/sqrt(x)) - 1/6*x^(3/2)*(3/x - 1) - 1/2*arctan(1/sqrt(x))
```

maple [A] time = 0.04, size = 27, normalized size = 0.64

$$\frac{x^{\frac{3}{2}}}{6} + \frac{x^2 \operatorname{arccot}\left(\sqrt{x}\right)}{2} + \frac{\arctan\left(\sqrt{x}\right)}{2} - \frac{\sqrt{x}}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*arccot(x^(1/2)),x)
[Out] 1/6*x^(3/2)+1/2*x^2*arccot(x^(1/2))+1/2*arctan(x^(1/2))-1/2*x^(1/2)
```

maxima [A] time = 0.42, size = 26, normalized size = 0.62

$$\frac{1}{2}x^2 \operatorname{arccot}\left(\sqrt{x}\right) + \frac{1}{6}x^{\frac{3}{2}} - \frac{1}{2}\sqrt{x} + \frac{1}{2}\arctan\left(\sqrt{x}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*arccot(x^(1/2)),x, algorithm="maxima")
```

```
[Out] 1/2*x^2*arccot(sqrt(x)) + 1/6*x^(3/2) - 1/2*sqrt(x) + 1/2*arctan(sqrt(x))
```

mupad [B] time = 0.66, size = 26, normalized size = 0.62

$$\frac{\operatorname{atan}\left(\sqrt{x}\right)}{2}+\frac{x^2\operatorname{acot}\left(\sqrt{x}\right)}{2}-\frac{\sqrt{x}}{2}+\frac{x^{3/2}}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*acot(x^(1/2)),x)
```

```
[Out] atan(x^(1/2))/2 + (x^2*acot(x^(1/2)))/2 - x^(1/2)/2 + x^(3/2)/6
```

sympy [A] time = 1.29, size = 32, normalized size = 0.76

$$\frac{x^{\frac{3}{2}}}{6}-\frac{\sqrt{x}}{2}+\frac{x^2\operatorname{acot}\left(\sqrt{x}\right)}{2}+\frac{\operatorname{atan}\left(\sqrt{x}\right)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*acot(x**(1/2)),x)
```

```
[Out] x**(3/2)/6 - sqrt(x)/2 + x**2*acot(sqrt(x))/2 + atan(sqrt(x))/2
```

3.87 $\int \cot^{-1}\left(\sqrt{x}\right) dx$

Optimal. Leaf size=22

$$\sqrt{x} - \tan^{-1}\left(\sqrt{x}\right) + x\cot^{-1}\left(\sqrt{x}\right)$$

```
[Out] x*arccot(x^(1/2))-arctan(x^(1/2))+x^(1/2)
```

Rubi [A] time = 0.01, antiderivative size = 22, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 6, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.667, Rules used = {5028, 50, 63, 203}

$$\sqrt{x} - \tan^{-1}\left(\sqrt{x}\right) + x\cot^{-1}\left(\sqrt{x}\right)$$

Antiderivative was successfully verified.

```
[In] Int[ArcCot[Sqrt[x]],x]
```

```
[Out] Sqrt[x] + x*ArcCot[Sqrt[x]] - ArcTan[Sqrt[x]]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 203

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

Rule 5028

```
Int[ArcCot[(c_.)*(x_)^(n_)], x_Symbol] :> Simp[x*ArcCot[c*x^n], x] + Dist[c
*n, Int[x^n/(1 + c^2*x^(2*n)), x], x] /; FreeQ[{c, n}, x]
```

Rubi steps

$$\begin{aligned}
\int \cot^{-1}\left(\sqrt{x}\right) dx &= x\cot^{-1}\left(\sqrt{x}\right) + \frac{1}{2}\int \frac{\sqrt{x}}{1+x}\, dx \\
&= \sqrt{x} + x\cot^{-1}\left(\sqrt{x}\right) - \frac{1}{2}\int \frac{1}{\sqrt{x}\,(1+x)}\, dx \\
&= \sqrt{x} + x\cot^{-1}\left(\sqrt{x}\right) - \text{Subst}\left(\int \frac{1}{1+x^2}\, dx, x, \sqrt{x}\right) \\
&= \sqrt{x} + x\cot^{-1}\left(\sqrt{x}\right) - \tan^{-1}\left(\sqrt{x}\right)
\end{aligned}$$

Mathematica [A] time = 0.01, size = 22, normalized size = 1.00

$$\sqrt{x} - \tan^{-1}\left(\sqrt{x}\right) + x\cot^{-1}\left(\sqrt{x}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcCot[Sqrt[x]],x]
[Out] Sqrt[x] + x*ArcCot[Sqrt[x]] - ArcTan[Sqrt[x]]
```

fricas [A] time = 0.57, size = 12, normalized size = 0.55

$$(x+1)\operatorname{arccot}\left(\sqrt{x}\right) + \sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(x^(1/2)),x, algorithm="fricas")
[Out] (x + 1)*arccot(sqrt(x)) + sqrt(x)
```

giac [A] time = 0.12, size = 14, normalized size = 0.64

$$x\arctan\left(\frac{1}{\sqrt{x}}\right) + \sqrt{x} + \arctan\left(\frac{1}{\sqrt{x}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(x^(1/2)),x, algorithm="giac")
[Out] x*arctan(1/sqrt(x)) + sqrt(x) + arctan(1/sqrt(x))
```

maple [A] time = 0.04, size = 17, normalized size = 0.77

$$x\operatorname{arccot}\left(\sqrt{x}\right) - \arctan\left(\sqrt{x}\right) + \sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arccot(x^(1/2)),x)
[Out] x*arccot(x^(1/2))-arctan(x^(1/2))+x^(1/2)
```

maxima [A] time = 0.41, size = 16, normalized size = 0.73

$$x\operatorname{arccot}\left(\sqrt{x}\right) + \sqrt{x} - \arctan\left(\sqrt{x}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(x^(1/2)),x, algorithm="maxima")
[Out] x*arccot(sqrt(x)) + sqrt(x) - arctan(sqrt(x))
```

mupad [B] time = 0.63, size = 16, normalized size = 0.73

$$x\operatorname{acot}\left(\sqrt{x}\right) - \operatorname{atan}\left(\sqrt{x}\right) + \sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(acot(x^(1/2)),x)
[Out] x*acot(x^(1/2)) - atan(x^(1/2)) + x^(1/2)
```

sympy [A] time = 1.18, size = 19, normalized size = 0.86

$$\sqrt{x} + x\operatorname{acot}\left(\sqrt{x}\right) - \operatorname{atan}\left(\sqrt{x}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(acot(x**(1/2)),x)
[Out] sqrt(x) + x*acot(sqrt(x)) - atan(sqrt(x))
```

3.88 $\int \frac{\cot^{-1}(\sqrt{x})}{x} \, dx$

Optimal. Leaf size=31

$$i\text{Li}_2\left(\frac{i}{\sqrt{x}}\right) - i\text{Li}_2\left(-\frac{i}{\sqrt{x}}\right)$$

```
[Out] -I*polylog(2,-I/x^(1/2))+I*polylog(2,I/x^(1/2))
```

Rubi [A] time = 0.03, antiderivative size = 31, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}} = 0.300$, Rules used = {5032, 4849, 2391}

$$i\text{PolyLog}\left(2, \frac{i}{\sqrt{x}}\right) - i\text{PolyLog}\left(2, -\frac{i}{\sqrt{x}}\right)$$

Antiderivative was successfully verified.

```
[In] Int[ArcCot[Sqrt[x]]/x,x]
```

```
[Out] (-I)*PolyLog[2, (-I)/Sqrt[x]] + I*PolyLog[2, I/Sqrt[x]]
```

Rule 2391

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

Rule 4849

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))/(x_), x_Symbol] :> Simp[a*Log[x], x]
 + (Dist[(I*b)/2, Int[Log[1 - I/(c*x)]/x, x], x] - Dist[(I*b)/2, Int[Log[1
+ I/(c*x)]/x, x], x]) /; FreeQ[{a, b, c}, x]
```

Rule 5032

```
Int[((a_.) + ArcCot[(c_.)*(x_)^(n_)]*(b_.))^(p_.)/(x_), x_Symbol] :> Dist[1
/n, Subst[Int[(a + b*ArcCot[c*x])^p/x, x], x, x^n], x] /; FreeQ[{a, b, c, n
}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{\cot^{-1}\left(\sqrt{x}\right)}{x} \, dx &= 2\,\text{Subst}\left(\int \frac{\cot^{-1}(x)}{x} \, dx, x, \sqrt{x}\right) \\
&= i\,\text{Subst}\left(\int \frac{\log\left(1-\frac{i}{x}\right)}{x} \, dx, x, \sqrt{x}\right) - i\,\text{Subst}\left(\int \frac{\log\left(1+\frac{i}{x}\right)}{x} \, dx, x, \sqrt{x}\right) \\
&= -i\text{Li}_2\left(-\frac{i}{\sqrt{x}}\right) + i\text{Li}_2\left(\frac{i}{\sqrt{x}}\right)
\end{aligned}$$

Mathematica [A] time = 0.01, size = 31, normalized size = 1.00

$$i\text{Li}_2\left(\frac{i}{\sqrt{x}}\right) - i\text{Li}_2\left(-\frac{i}{\sqrt{x}}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcCot[Sqrt[x]]/x,x]
```

```
[Out] (-I)*PolyLog[2, (-I)/Sqrt[x]] + I*PolyLog[2, I/Sqrt[x]]
```

fricas [F] time = 0.61, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\operatorname{arccot}\left(\sqrt{x}\right)}{x}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(x^(1/2))/x,x, algorithm="fricas")
```

```
[Out] integral(arccot(sqrt(x))/x, x)
```

giac [A] time = 0.15, size = 19, normalized size = 0.61

$$-x\arctan\left(\frac{1}{\sqrt{x}}\right) - \sqrt{x} - \arctan\left(\frac{1}{\sqrt{x}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(x^(1/2))/x,x, algorithm="giac")
```

```
[Out] -x*arctan(1/sqrt(x)) - sqrt(x) - arctan(1/sqrt(x))
```

maple [B] time = 0.06, size = 61, normalized size = 1.97

$$\ln(x)\operatorname{arccot}\left(\sqrt{x}\right)-\frac{i\ln(x)\ln\left(1+i\sqrt{x}\right)}{2}+\frac{i\ln(x)\ln\left(1-i\sqrt{x}\right)}{2}-i\operatorname{dilog}\left(1+i\sqrt{x}\right)+i\operatorname{dilog}\left(1-i\sqrt{x}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arccot(x^(1/2))/x,x)
```

```
[Out] ln(x)*arccot(x^(1/2))-1/2*I*ln(x)*ln(1+I*x^(1/2))+1/2*I*ln(x)*ln(1-I*x^(1/2
))-I*dilog(1+I*x^(1/2))+I*dilog(1-I*x^(1/2))
```

maxima [B] time = 0.45, size = 35, normalized size = 1.13

$$\frac{1}{2}\pi\log(x+1) + \operatorname{arccot}\left(\sqrt{x}\right)\log(x) + i\operatorname{Li}_2\left(i\sqrt{x}+1\right) - i\operatorname{Li}_2\left(-i\sqrt{x}+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(x^(1/2))/x,x, algorithm="maxima")
```

```
[Out] 1/2*pi*log(x + 1) + arccot(sqrt(x))*log(x) + I*dilog(I*sqrt(x) + 1) - I*dil
og(-I*sqrt(x) + 1)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\operatorname{acot}\left(\sqrt{x}\right)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(acot(x^(1/2))/x,x)
```

```
[Out] int(acot(x^(1/2))/x, x)
```

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

$$\int \frac{\operatorname{acot}\left(\sqrt{x}\right)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(acot(x**(1/2))/x,x)
```

```
[Out] Integral(acot(sqrt(x))/x, x)
```

3.89 $\int \frac{\cot^{-1}(\sqrt{x})}{x^2} dx$

Optimal. Leaf size=23

$$\frac{1}{\sqrt{x}}+\tan^{-1}\left(\sqrt{x}\right)-\frac{\cot^{-1}\left(\sqrt{x}\right)}{x}$$

[Out] -arccot(x^(1/2))/x+arctan(x^(1/2))+1/x^(1/2)

Rubi [A] time = 0.01, antiderivative size = 23, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.400, Rules used = {5034, 51, 63, 203}

$$\frac{1}{\sqrt{x}}+\tan^{-1}\left(\sqrt{x}\right)-\frac{\cot^{-1}\left(\sqrt{x}\right)}{x}$$

Antiderivative was successfully verified.

[In] Int[ArcCot[Sqrt[x]]/x^2,x]

[Out] 1/Sqrt[x] - ArcCot[Sqrt[x]]/x + ArcTan[Sqrt[x]]

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 203

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

Rule 5034

```
Int[((a_.) + ArcCot[(c_.)*(x_)^(n_)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :
> Simp[((d*x)^(m + 1)*(a + b*ArcCot[c*x^n]))/(d*(m + 1)), x] + Dist[(b*c*n)
/(d*(m + 1)), Int[(x^(n - 1)*(d*x)^(m + 1))/(1 + c^2*x^(2*n)), x], x] /; Fr
eeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rubi steps

$$\int \frac{\cot^{-1}\left(\sqrt{x}\right)}{x^2}\,dx = -\frac{\cot^{-1}\left(\sqrt{x}\right)}{x} - \frac{1}{2}\int \frac{1}{x^{3/2}(1+x)}\,dx$$
$$= \frac{1}{\sqrt{x}} - \frac{\cot^{-1}\left(\sqrt{x}\right)}{x} + \frac{1}{2}\int \frac{1}{\sqrt{x}\,(1+x)}\,dx$$
$$= \frac{1}{\sqrt{x}} - \frac{\cot^{-1}\left(\sqrt{x}\right)}{x} + \text{Subst}\left(\int \frac{1}{1+x^2}\,dx, x, \sqrt{x}\right)$$
$$= \frac{1}{\sqrt{x}} - \frac{\cot^{-1}\left(\sqrt{x}\right)}{x} + \tan^{-1}\left(\sqrt{x}\right)$$

Mathematica [C] time = 0.01, size = 29, normalized size = 1.26

$$\frac{{}_2F_1\left(-\frac{1}{2},1;\frac{1}{2};-x\right)}{\sqrt{x}} - \frac{\cot^{-1}\left(\sqrt{x}\right)}{x}$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcCot[Sqrt[x]]/x^2,x]
[Out] -(ArcCot[Sqrt[x]]/x) + Hypergeometric2F1[-1/2, 1, 1/2, -x]/Sqrt[x]
```

fricas [A] time = 0.67, size = 19, normalized size = 0.83

$$-\frac{(x+1)\,\mathrm{arccot}\left(\sqrt{x}\right) - \sqrt{x}}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(x^(1/2))/x^2,x, algorithm="fricas")
[Out] -((x + 1)*arccot(sqrt(x)) - sqrt(x))/x
```

giac [A] time = 0.13, size = 19, normalized size = 0.83

$$-\frac{\arctan\left(\frac{1}{\sqrt{x}}\right)}{x} + \frac{1}{\sqrt{x}} - \arctan\left(\frac{1}{\sqrt{x}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(x^(1/2))/x^2,x, algorithm="giac")
[Out] -arctan(1/sqrt(x))/x + 1/sqrt(x) - arctan(1/sqrt(x))
```

maple [A] time = 0.04, size = 18, normalized size = 0.78

$$-\frac{\mathrm{arccot}\left(\sqrt{x}\right)}{x} + \arctan\left(\sqrt{x}\right) + \frac{1}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arccot(x^(1/2))/x^2,x)
[Out] -arccot(x^(1/2))/x+arctan(x^(1/2))+1/x^(1/2)
```

maxima [A] time = 0.43, size = 17, normalized size = 0.74

$$-\frac{\mathrm{arccot}\left(\sqrt{x}\right)}{x} + \frac{1}{\sqrt{x}} + \arctan\left(\sqrt{x}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(x^(1/2))/x^2,x, algorithm="maxima")
```

```
[Out] -arccot(sqrt(x))/x + 1/sqrt(x) + arctan(sqrt(x))
```

mupad [B] time = 0.64, size = 17, normalized size = 0.74

$$\operatorname{atan}\left(\sqrt{x}\right)-\frac{\operatorname{acot}\left(\sqrt{x}\right)}{x}+\frac{1}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(acot(x^(1/2))/x^2,x)
```

```
[Out] atan(x^(1/2)) - acot(x^(1/2))/x + 1/x^(1/2)
```

sympy [B] time = 1.94, size = 92, normalized size = 4.00

$$-\frac{x^{\frac{5}{2}}\operatorname{acot}\left(\sqrt{x}\right)}{x^{\frac{5}{2}}+x^{\frac{3}{2}}}-\frac{2x^{\frac{3}{2}}\operatorname{acot}\left(\sqrt{x}\right)}{x^{\frac{5}{2}}+x^{\frac{3}{2}}}-\frac{\sqrt{x}\operatorname{acot}\left(\sqrt{x}\right)}{x^{\frac{5}{2}}+x^{\frac{3}{2}}}+\frac{x^{2}}{x^{\frac{5}{2}}+x^{\frac{3}{2}}}+\frac{x}{x^{\frac{5}{2}}+x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(acot(x**(1/2))/x**2,x)
```

```
[Out] -x**(5/2)*acot(sqrt(x))/(x**(5/2) + x**(3/2)) - 2*x**(3/2)*acot(sqrt(x))/(x
**(5/2) + x**(3/2)) - sqrt(x)*acot(sqrt(x))/(x**(5/2) + x**(3/2)) + x**2/(x
**(5/2) + x**(3/2)) + x/(x**(5/2) + x**(3/2))
```

3.90 $\int \frac{\cot^{-1}(\sqrt{x})}{x^3} dx$

Optimal. Leaf size=42

$$\frac{1}{6x^{3/2}} - \frac{\cot^{-1}(\sqrt{x})}{2x^2} - \frac{1}{2\sqrt{x}} - \frac{1}{2}\tan^{-1}(\sqrt{x})$$

```
[Out] 1/6/x^(3/2)-1/2*arccot(x^(1/2))/x^2-1/2*arctan(x^(1/2))-1/2/x^(1/2)
```

Rubi [A] time = 0.01, antiderivative size = 42, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}} = 0.400$, Rules used = {5034, 51, 63, 203}

$$\frac{1}{6x^{3/2}} - \frac{\cot^{-1}(\sqrt{x})}{2x^2} - \frac{1}{2\sqrt{x}} - \frac{1}{2}\tan^{-1}(\sqrt{x})$$

Antiderivative was successfully verified.

```
[In] Int[ArcCot[Sqrt[x]]/x^3,x]
```

```
[Out] 1/(6*x^(3/2)) - 1/(2*Sqrt[x]) - ArcCot[Sqrt[x]]/(2*x^2) - ArcTan[Sqrt[x]]/2
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 203

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

Rule 5034

```
Int[((a_.) + ArcCot[(c_.)*(x_)^(n_)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :
> Simp[((d*x)^(m + 1)*(a + b*ArcCot[c*x^n]))/(d*(m + 1)), x] + Dist[(b*c*n)
/(d*(m + 1)), Int[(x^(n - 1)*(d*x)^(m + 1))/(1 + c^2*x^(2*n)), x], x] /; Fr
eeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rubi steps

$$\begin{aligned}
\int \frac{\cot^{-1}\left(\sqrt{x}\right)}{x^3}\,dx &= -\frac{\cot^{-1}\left(\sqrt{x}\right)}{2x^2} - \frac{1}{4}\int \frac{1}{x^{5/2}(1+x)}\,dx \\
&= \frac{1}{6x^{3/2}} - \frac{\cot^{-1}\left(\sqrt{x}\right)}{2x^2} + \frac{1}{4}\int \frac{1}{x^{3/2}(1+x)}\,dx \\
&= \frac{1}{6x^{3/2}} - \frac{1}{2\sqrt{x}} - \frac{\cot^{-1}\left(\sqrt{x}\right)}{2x^2} - \frac{1}{4}\int \frac{1}{\sqrt{x}\,(1+x)}\,dx \\
&= \frac{1}{6x^{3/2}} - \frac{1}{2\sqrt{x}} - \frac{\cot^{-1}\left(\sqrt{x}\right)}{2x^2} - \frac{1}{2}\,\text{Subst}\left(\int \frac{1}{1+x^2}\,dx, x, \sqrt{x}\right) \\
&= \frac{1}{6x^{3/2}} - \frac{1}{2\sqrt{x}} - \frac{\cot^{-1}\left(\sqrt{x}\right)}{2x^2} - \frac{1}{2}\tan^{-1}\left(\sqrt{x}\right)
\end{aligned}$$

Mathematica [C] time = 0.01, size = 34, normalized size = 0.81

$$\frac{{}_2F_1\left(-\frac{3}{2},1;-\frac{1}{2};-x\right)}{6x^{3/2}} - \frac{\cot^{-1}\left(\sqrt{x}\right)}{2x^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcCot[Sqrt[x]]/x^3,x]
[Out] -1/2*ArcCot[Sqrt[x]]/x^2 + Hypergeometric2F1[-3/2, 1, -1/2, -x]/(6*x^(3/2))
```

fricas [A] time = 0.53, size = 27, normalized size = 0.64

$$\frac{3\left(x^2-1\right)\text{arccot}\left(\sqrt{x}\right) - (3\,x-1)\sqrt{x}}{6\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(x^(1/2))/x^3,x, algorithm="fricas")
[Out] 1/6*(3*(x^2 - 1)*arccot(sqrt(x)) - (3*x - 1)*sqrt(x))/x^2
```

giac [A] time = 0.12, size = 26, normalized size = 0.62

$$-\frac{1}{2\,\sqrt{x}} - \frac{\arctan\left(\frac{1}{\sqrt{x}}\right)}{2\,x^2} + \frac{1}{6\,x^{\frac{3}{2}}} + \frac{1}{2}\,\arctan\left(\frac{1}{\sqrt{x}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(x^(1/2))/x^3,x, algorithm="giac")
[Out] -1/2/sqrt(x) - 1/2*arctan(1/sqrt(x))/x^2 + 1/6/x^(3/2) + 1/2*arctan(1/sqrt(
x))
```

maple [A] time = 0.05, size = 27, normalized size = 0.64

$$\frac{1}{6x^{\frac{3}{2}}} - \frac{\text{arccot}\left(\sqrt{x}\right)}{2x^2} - \frac{\arctan\left(\sqrt{x}\right)}{2} - \frac{1}{2\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arccot(x^(1/2))/x^3,x)
```

```
[Out] 1/6/x^(3/2)-1/2*arccot(x^(1/2))/x^2-1/2*arctan(x^(1/2))-1/2/x^(1/2)
```

maxima [A] time = 0.41, size = 26, normalized size = 0.62

$$-\frac{3\,x-1}{6\,x^{\frac{3}{2}}}-\frac{\operatorname{arccot}\left(\sqrt{x}\right)}{2\,x^2}-\frac{1}{2}\,\arctan\left(\sqrt{x}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(x^(1/2))/x^3,x, algorithm="maxima")
[Out] -1/6*(3*x - 1)/x^(3/2) - 1/2*arccot(sqrt(x))/x^2 - 1/2*arctan(sqrt(x))
```

mupad [B] time = 0.65, size = 24, normalized size = 0.57

$$-\frac{\operatorname{atan}\left(\sqrt{x}\right)}{2}-\frac{x-\frac{1}{3}}{2\,x^{3/2}}-\frac{\operatorname{acot}\left(\sqrt{x}\right)}{2\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(acot(x^(1/2))/x^3,x)
[Out] - atan(x^(1/2))/2 - (x - 1/3)/(2*x^(3/2)) - acot(x^(1/2))/(2*x^2)
```

sympy [B] time = 4.95, size = 160, normalized size = 3.81

$$\frac{3x^{\frac{7}{2}}\operatorname{acot}\left(\sqrt{x}\right)}{6x^{\frac{7}{2}}+6x^{\frac{5}{2}}}+\frac{3x^{\frac{5}{2}}\operatorname{acot}\left(\sqrt{x}\right)}{6x^{\frac{7}{2}}+6x^{\frac{5}{2}}}-\frac{3x^{\frac{3}{2}}\operatorname{acot}\left(\sqrt{x}\right)}{6x^{\frac{7}{2}}+6x^{\frac{5}{2}}}-\frac{3\sqrt{x}\operatorname{acot}\left(\sqrt{x}\right)}{6x^{\frac{7}{2}}+6x^{\frac{5}{2}}}-\frac{3x^3}{6x^{\frac{7}{2}}+6x^{\frac{5}{2}}}-\frac{2x^2}{6x^{\frac{7}{2}}+6x^{\frac{5}{2}}}+\frac{x}{6x^{\frac{7}{2}}+6x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(acot(x**(1/2))/x**3,x)
[Out] 3*x**(7/2)*acot(sqrt(x))/(6*x**(7/2) + 6*x**(5/2)) + 3*x**(5/2)*acot(sqrt(x
))/(6*x**(7/2) + 6*x**(5/2)) - 3*x**(3/2)*acot(sqrt(x))/(6*x**(7/2) + 6*x**
(5/2)) - 3*sqrt(x)*acot(sqrt(x))/(6*x**(7/2) + 6*x**(5/2)) - 3*x**3/(6*x**(
7/2) + 6*x**(5/2)) - 2*x**2/(6*x**(7/2) + 6*x**(5/2)) + x/(6*x**(7/2) + 6*x
**(5/2))
```

3.91 $\int x^{3/2} \cot^{-1}\left(\sqrt{x}\right) dx$

Optimal. Leaf size=36

$$\frac{2}{5}x^{5/2}\cot^{-1}\left(\sqrt{x}\right)+\frac{x^2}{10}-\frac{x}{5}+\frac{1}{5}\log(x+1)$$

```
[Out] -1/5*x+1/10*x^2+2/5*x^(5/2)*arccot(x^(1/2))+1/5*ln(1+x)
```

Rubi [A] time = 0.01, antiderivative size = 36, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {5034, 43}

$$\frac{x^2}{10}+\frac{2}{5}x^{5/2}\cot^{-1}\left(\sqrt{x}\right)-\frac{x}{5}+\frac{1}{5}\log(x+1)$$

Antiderivative was successfully verified.

```
[In] Int[x^(3/2)*ArcCot[Sqrt[x]],x]
```

```
[Out] -x/5 + x^2/10 + (2*x^(5/2)*ArcCot[Sqrt[x]])/5 + Log[1 + x]/5
```

Rule 43

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

Rule 5034

```
Int[((a_.) + ArcCot[(c_.)*(x_)^(n_)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :
> Simp[((d*x)^(m + 1)*(a + b*ArcCot[c*x^n]))/(d*(m + 1)), x] + Dist[(b*c*n)
/(d*(m + 1)), Int[(x^(n - 1)*(d*x)^(m + 1))/(1 + c^2*x^(2*n)), x], x] /; Fr
eeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rubi steps

$$\begin{aligned}
\int x^{3/2}\cot^{-1}\left(\sqrt{x}\right)dx &= \frac{2}{5}x^{5/2}\cot^{-1}\left(\sqrt{x}\right)+\frac{1}{5}\int\frac{x^2}{1+x}\,dx\\
&= \frac{2}{5}x^{5/2}\cot^{-1}\left(\sqrt{x}\right)+\frac{1}{5}\int\left(-1+x+\frac{1}{1+x}\right)dx\\
&= -\frac{x}{5}+\frac{x^2}{10}+\frac{2}{5}x^{5/2}\cot^{-1}\left(\sqrt{x}\right)+\frac{1}{5}\log(1+x)
\end{aligned}$$

Mathematica [A] time = 0.02, size = 29, normalized size = 0.81

$$\frac{1}{10}\left(4x^{5/2}\cot^{-1}\left(\sqrt{x}\right)+(x-2)x+2\log(x+1)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(3/2)*ArcCot[Sqrt[x]],x]
```

```
[Out] ((-2 + x)*x + 4*x^(5/2)*ArcCot[Sqrt[x]] + 2*Log[1 + x])/10
```

fricas [A] time = 1.46, size = 24, normalized size = 0.67

$$\frac{2}{5}x^{\frac{5}{2}}\operatorname{arccot}\left(\sqrt{x}\right)+\frac{1}{10}x^2-\frac{1}{5}x+\frac{1}{5}\log\left(x+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*arccot(x^(1/2)),x, algorithm="fricas")
```

```
[Out] 2/5*x^(5/2)*arccot(sqrt(x)) + 1/10*x^2 - 1/5*x + 1/5*log(x + 1)
```

giac [A] time = 0.13, size = 39, normalized size = 1.08

$$\frac{2}{5}\,x^{\frac{5}{2}}\arctan\left(\frac{1}{\sqrt{x}}\right)-\frac{1}{10}\,x^{2}\left(\frac{2}{x}-\frac{3}{x^{2}}-1\right)+\frac{1}{5}\,\log(x)+\frac{1}{5}\,\log\left(\frac{1}{x}+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*arccot(x^(1/2)),x, algorithm="giac")
```

```
[Out] 2/5*x^(5/2)*arctan(1/sqrt(x)) - 1/10*x^2*(2/x - 3/x^2 - 1) + 1/5*log(x) + 1
/5*log(1/x + 1)
```

maple [A] time = 0.04, size = 25, normalized size = 0.69

$$-\frac{x}{5}+\frac{x^{2}}{10}+\frac{2x^{\frac{5}{2}}\operatorname{arccot}\left(\sqrt{x}\right)}{5}+\frac{\ln\left(x+1\right)}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3/2)*arccot(x^(1/2)),x)
```

```
[Out] -1/5*x+1/10*x^2+2/5*x^(5/2)*arccot(x^(1/2))+1/5*ln(x+1)
```

maxima [A] time = 0.33, size = 24, normalized size = 0.67

$$\frac{2}{5}\,x^{\frac{5}{2}}\operatorname{arccot}\left(\sqrt{x}\right)+\frac{1}{10}\,x^{2}-\frac{1}{5}\,x+\frac{1}{5}\,\log\left(x+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*arccot(x^(1/2)),x, algorithm="maxima")
```

```
[Out] 2/5*x^(5/2)*arccot(sqrt(x)) + 1/10*x^2 - 1/5*x + 1/5*log(x + 1)
```

mupad [B] time = 0.65, size = 24, normalized size = 0.67

$$\frac{\ln\left(x+1\right)}{5}-\frac{x}{5}+\frac{2\,x^{5/2}\,\mathrm{acot}\left(\sqrt{x}\right)}{5}+\frac{x^2}{10}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3/2)*acot(x^(1/2)),x)
```

```
[Out] log(x + 1)/5 - x/5 + (2*x^(5/2)*acot(x^(1/2)))/5 + x^2/10
```

sympy [B] time = 4.96, size = 85, normalized size = 2.36

$$\frac{4x^{\frac{7}{2}}\operatorname{acot}\left(\sqrt{x}\right)}{10x+10}+\frac{4x^{\frac{5}{2}}\operatorname{acot}\left(\sqrt{x}\right)}{10x+10}+\frac{x^{3}}{10x+10}-\frac{x^{2}}{10x+10}+\frac{2x\log\left(x+1\right)}{10x+10}+\frac{2\log\left(x+1\right)}{10x+10}+\frac{2}{10x+10}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(3/2)*acot(x**(1/2)),x)
```

```
[Out] 4*x**(7/2)*acot(sqrt(x))/(10*x + 10) + 4*x**(5/2)*acot(sqrt(x))/(10*x + 10)
 + x**3/(10*x + 10) - x**2/(10*x + 10) + 2*x*log(x + 1)/(10*x + 10) + 2*log
(x + 1)/(10*x + 10) + 2/(10*x + 10)
```

3.92 $\int \sqrt{x} \cot^{-1}\left(\sqrt{x}\right) dx$

Optimal. Leaf size=29

$$\frac{2}{3}x^{3/2}\cot^{-1}\left(\sqrt{x}\right)+\frac{x}{3}-\frac{1}{3}\log(x+1)$$

```
[Out] 1/3*x+2/3*x^(3/2)*arccot(x^(1/2))-1/3*ln(1+x)
```

Rubi [A] time = 0.01, antiderivative size = 29, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {5034, 43}

$$\frac{2}{3}x^{3/2}\cot^{-1}\left(\sqrt{x}\right)+\frac{x}{3}-\frac{1}{3}\log(x+1)$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[x]*ArcCot[Sqrt[x]],x]
```

```
[Out] x/3 + (2*x^(3/2)*ArcCot[Sqrt[x]])/3 - Log[1 + x]/3
```

Rule 43

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

Rule 5034

```
Int[((a_.) + ArcCot[(c_.)*(x_)^(n_)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :
> Simp[((d*x)^(m + 1)*(a + b*ArcCot[c*x^n]))/(d*(m + 1)), x] + Dist[(b*c*n)
/(d*(m + 1)), Int[(x^(n - 1)*(d*x)^(m + 1))/(1 + c^2*x^(2*n)), x], x] /; Fr
eeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rubi steps

$$\begin{aligned}\int \sqrt{x}\cot^{-1}\left(\sqrt{x}\right) dx &= \frac{2}{3}x^{3/2}\cot^{-1}\left(\sqrt{x}\right)+\frac{1}{3}\int \frac{x}{1+x}\,dx\\ &= \frac{2}{3}x^{3/2}\cot^{-1}\left(\sqrt{x}\right)+\frac{1}{3}\int \left(1+\frac{1}{-1-x}\right) dx\\ &= \frac{x}{3}+\frac{2}{3}x^{3/2}\cot^{-1}\left(\sqrt{x}\right)-\frac{1}{3}\log(1+x)\end{aligned}$$

Mathematica [A] time = 0.01, size = 25, normalized size = 0.86

$$\frac{1}{3}\left(2x^{3/2}\cot^{-1}\left(\sqrt{x}\right)+x-\log(x+1)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[x]*ArcCot[Sqrt[x]],x]
```

```
[Out] (x + 2*x^(3/2)*ArcCot[Sqrt[x]] - Log[1 + x])/3
```

fricas [A] time = 1.13, size = 19, normalized size = 0.66

$$\frac{2}{3}x^{\frac{3}{2}}\operatorname{arccot}\left(\sqrt{x}\right)+\frac{1}{3}x-\frac{1}{3}\log\left(x+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(1/2)*arccot(x^(1/2)),x, algorithm="fricas")
```

```
[Out] 2/3*x^(3/2)*arccot(sqrt(x)) + 1/3*x - 1/3*log(x + 1)
```

giac [A] time = 0.12, size = 30, normalized size = 1.03

$$\frac{2}{3}\,x^{\frac{3}{2}}\arctan\left(\frac{1}{\sqrt{x}}\right)-\frac{1}{3}\,x\left(\frac{1}{x}-1\right)-\frac{1}{3}\,\log(x)-\frac{1}{3}\,\log\left(\frac{1}{x}+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(1/2)*arccot(x^(1/2)),x, algorithm="giac")
```

```
[Out] 2/3*x^(3/2)*arctan(1/sqrt(x)) - 1/3*x*(1/x - 1) - 1/3*log(x) - 1/3*log(1/x
+ 1)
```

maple [A] time = 0.04, size = 20, normalized size = 0.69

$$\frac{x}{3}+\frac{2x^{\frac{3}{2}}\operatorname{arccot}\left(\sqrt{x}\right)}{3}-\frac{\ln\left(x+1\right)}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(1/2)*arccot(x^(1/2)),x)
```

```
[Out] 1/3*x+2/3*x^(3/2)*arccot(x^(1/2))-1/3*ln(x+1)
```

maxima [A] time = 0.31, size = 19, normalized size = 0.66

$$\frac{2}{3}\,x^{\frac{3}{2}}\operatorname{arccot}\left(\sqrt{x}\right)+\frac{1}{3}\,x-\frac{1}{3}\,\log\left(x+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(1/2)*arccot(x^(1/2)),x, algorithm="maxima")
```

```
[Out] 2/3*x^(3/2)*arccot(sqrt(x)) + 1/3*x - 1/3*log(x + 1)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.03

$$\int \sqrt{x}\,\operatorname{acot}\left(\sqrt{x}\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(1/2)*acot(x^(1/2)),x)
```

```
[Out] int(x^(1/2)*acot(x^(1/2)), x)
```

sympy [A] time = 1.27, size = 24, normalized size = 0.83

$$\frac{2x^{\frac{3}{2}}\operatorname{acot}\left(\sqrt{x}\right)}{3}+\frac{x}{3}-\frac{\log\left(x+1\right)}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(1/2)*acot(x**(1/2)),x)
```

```
[Out] 2*x**(3/2)*acot(sqrt(x))/3 + x/3 - log(x + 1)/3
```

3.93 $\int \frac{\cot^{-1}(\sqrt{x})}{\sqrt{x}}\,dx$

Optimal. Leaf size=18

$$\log(x+1)+2\sqrt{x}\cot^{-1}\left(\sqrt{x}\right)$$

```
[Out] ln(1+x)+2*x^(1/2)*arccot(x^(1/2))
```

Rubi [A] time = 0.01, antiderivative size = 18, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {5034, 31}

$$\log(x+1)+2\sqrt{x}\cot^{-1}\left(\sqrt{x}\right)$$

Antiderivative was successfully verified.

```
[In] Int[ArcCot[Sqrt[x]]/Sqrt[x],x]
```

```
[Out] 2*Sqrt[x]*ArcCot[Sqrt[x]] + Log[1 + x]
```

Rule 31

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

Rule 5034

```
Int[((a_.) + ArcCot[(c_.)*(x_)^(n_)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :
> Simp[((d*x)^(m + 1)*(a + b*ArcCot[c*x^n]))/(d*(m + 1)), x] + Dist[(b*c*n)
/(d*(m + 1)), Int[(x^(n - 1)*(d*x)^(m + 1))/(1 + c^2*x^(2*n)), x], x] /; Fr
eeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rubi steps

$$\begin{aligned}\int \frac{\cot^{-1}\left(\sqrt{x}\right)}{\sqrt{x}}\,dx &= 2\sqrt{x}\cot^{-1}\left(\sqrt{x}\right)+\int \frac{1}{1+x}\,dx\\ &= 2\sqrt{x}\cot^{-1}\left(\sqrt{x}\right)+\log(1+x)\end{aligned}$$

Mathematica [A] time = 0.01, size = 18, normalized size = 1.00

$$\log(x+1)+2\sqrt{x}\cot^{-1}\left(\sqrt{x}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcCot[Sqrt[x]]/Sqrt[x],x]
```

```
[Out] 2*Sqrt[x]*ArcCot[Sqrt[x]] + Log[1 + x]
```

fricas [A] time = 0.79, size = 14, normalized size = 0.78

$$2\sqrt{x}\,\mathrm{arccot}\left(\sqrt{x}\right)+\log\left(x+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(x^(1/2))/x^(1/2),x, algorithm="fricas")
```

```
[Out] 2*sqrt(x)*arccot(sqrt(x)) + log(x + 1)
```

giac [**A**] time = 0.12, size = 18, normalized size = 1.00

$$2\sqrt{x}\arctan\left(\frac{1}{\sqrt{x}}\right)+\log(x)+\log\left(\frac{1}{x}+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(x^(1/2))/x^(1/2),x, algorithm="giac")
[Out] 2*sqrt(x)*arctan(1/sqrt(x)) + log(x) + log(1/x + 1)
```

maple [**A**] time = 0.04, size = 15, normalized size = 0.83

$$\ln(x+1)+2\sqrt{x}\,\mathrm{arccot}\left(\sqrt{x}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arccot(x^(1/2))/x^(1/2),x)
[Out] ln(x+1)+2*x^(1/2)*arccot(x^(1/2))
```

maxima [**A**] time = 0.31, size = 14, normalized size = 0.78

$$2\sqrt{x}\,\mathrm{arccot}\left(\sqrt{x}\right)+\log(x+1)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(x^(1/2))/x^(1/2),x, algorithm="maxima")
[Out] 2*sqrt(x)*arccot(sqrt(x)) + log(x + 1)
```

mupad [**B**] time = 0.77, size = 14, normalized size = 0.78

$$\ln(x+1)+2\sqrt{x}\,\mathrm{acot}\left(\sqrt{x}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

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

sympy [**A**] time = 0.34, size = 17, normalized size = 0.94

$$2\sqrt{x}\,\mathrm{acot}\left(\sqrt{x}\right)+\log(x+1)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(acot(x**(1/2))/x**(1/2),x)
[Out] 2*sqrt(x)*acot(sqrt(x)) + log(x + 1)
```

3.94 $\int \frac{\cot^{-1}\left(\sqrt{x}\right)}{x^{3/2}}\,dx$

Optimal. Leaf size=22

$$-\log(x)+\log(x+1)-\frac{2\cot^{-1}\left(\sqrt{x}\right)}{\sqrt{x}}$$

```
[Out] -ln(x)+ln(1+x)-2*arccot(x^(1/2))/x^(1/2)
```

Rubi [A] time = 0.01, antiderivative size = 22, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333, Rules used = {5034, 36, 29, 31}

$$-\log(x)+\log(x+1)-\frac{2\cot^{-1}\left(\sqrt{x}\right)}{\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In] Int[ArcCot[Sqrt[x]]/x^(3/2),x]
```

```
[Out] (-2*ArcCot[Sqrt[x]])/Sqrt[x] - Log[x] + Log[1 + x]
```

Rule 29

```
Int[(x_)^(-1), x_Symbol] :> Simp[Log[x], x]
```

Rule 31

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

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x], x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 5034

```
Int[((a_.) + ArcCot[(c_.)*(x_)^(n_)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :> Simp[((d*x)^(m + 1)*(a + b*ArcCot[c*x^n]))/(d*(m + 1)), x] + Dist[(b*c*n)/(d*(m + 1)), Int[(x^(n - 1)*(d*x)^(m + 1))/(1 + c^2*x^(2*n)), x], x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rubi steps

$$\begin{aligned}
\int \frac{\cot^{-1}\left(\sqrt{x}\right)}{x^{3/2}}\,dx &= -\frac{2\cot^{-1}\left(\sqrt{x}\right)}{\sqrt{x}}-\int \frac{1}{x(1+x)}\,dx\\
&= -\frac{2\cot^{-1}\left(\sqrt{x}\right)}{\sqrt{x}}-\int \frac{1}{x}\,dx+\int \frac{1}{1+x}\,dx\\
&= -\frac{2\cot^{-1}\left(\sqrt{x}\right)}{\sqrt{x}}-\log(x)+\log(1+x)
\end{aligned}$$

Mathematica [A] time = 0.01, size = 22, normalized size = 1.00

$$-\log(x)+\log(x+1)-\frac{2\cot^{-1}\left(\sqrt{x}\right)}{\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcCot[Sqrt[x]]/x^(3/2),x]
[Out] (-2*ArcCot[Sqrt[x]])/Sqrt[x] - Log[x] + Log[1 + x]
```

fricas [A] time = 2.09, size = 25, normalized size = 1.14

$$\frac{x\log\left(x+1\right)-x\log(x)-2\sqrt{x}\operatorname{arccot}\left(\sqrt{x}\right)}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(x^(1/2))/x^(3/2),x, algorithm="fricas")
[Out] (x*log(x + 1) - x*log(x) - 2*sqrt(x)*arccot(sqrt(x)))/x
```

giac [A] time = 0.14, size = 16, normalized size = 0.73

$$-\frac{2\arctan\left(\frac{1}{\sqrt{x}}\right)}{\sqrt{x}}+\log\left(\frac{1}{x}+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(x^(1/2))/x^(3/2),x, algorithm="giac")
[Out] -2*arctan(1/sqrt(x))/sqrt(x) + log(1/x + 1)
```

maple [A] time = 0.04, size = 19, normalized size = 0.86

$$-\ln(x)+\ln\left(x+1\right)-\frac{2\operatorname{arccot}\left(\sqrt{x}\right)}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arccot(x^(1/2))/x^(3/2),x)
[Out] -ln(x)+ln(x+1)-2*arccot(x^(1/2))/x^(1/2)
```

maxima [A] time = 0.33, size = 18, normalized size = 0.82

$$-\frac{2\operatorname{arccot}\left(\sqrt{x}\right)}{\sqrt{x}}+\log\left(x+1\right)-\log(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(x^(1/2))/x^(3/2),x, algorithm="maxima")
[Out] -2*arccot(sqrt(x))/sqrt(x) + log(x + 1) - log(x)
```

mupad [B] time = 0.67, size = 20, normalized size = 0.91

$$\ln\left(x+1\right)-2\ln\left(\sqrt{x}\right)-\frac{2\operatorname{acot}\left(\sqrt{x}\right)}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(acot(x^(1/2))/x^(3/2),x)
[Out] log(x + 1) - 2*log(x^(1/2)) - (2*acot(x^(1/2)))/x^(1/2)
```

sympy [**A**] time = 1.18, size = 20, normalized size = 0.91

$$-\log(x) + \log(x+1) - \frac{2\operatorname{acot}\left(\sqrt{x}\right)}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(acot(x**(1/2))/x**(3/2),x)
[Out] -log(x) + log(x + 1) - 2*acot(sqrt(x))/sqrt(x)
```

3.95 $\int \frac{\cot^{-1}\left(\sqrt{x}\right)}{x^{5/2}}\,dx$

Optimal. Leaf size=37

$$-\frac{2\cot^{-1}\left(\sqrt{x}\right)}{3x^{3/2}}+\frac{1}{3x}+\frac{\log(x)}{3}-\frac{1}{3}\log(x+1)$$

[Out] 1/3/x-2/3*arccot(x^(1/2))/x^(3/2)+1/3*ln(x)-1/3*ln(1+x)

Rubi [A] time = 0.01, antiderivative size = 37, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {5034, 44}

$$-\frac{2\cot^{-1}\left(\sqrt{x}\right)}{3x^{3/2}}+\frac{1}{3x}+\frac{\log(x)}{3}-\frac{1}{3}\log(x+1)$$

Antiderivative was successfully verified.

[In] Int[ArcCot[Sqrt[x]]/x^(5/2),x]

[Out] 1/(3*x) - (2*ArcCot[Sqrt[x]])/(3*x^(3/2)) + Log[x]/3 - Log[1 + x]/3

Rule 44

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

Rule 5034

```
Int[((a_.) + ArcCot[(c_.)*(x_)^(n_)]*(b_.))*((d_.)*(x_))^(m_.), x_Symbol] :
> Simp[((d*x)^(m + 1)*(a + b*ArcCot[c*x^n]))/(d*(m + 1)), x] + Dist[(b*c*n)
/(d*(m + 1)), Int[(x^(n - 1)*(d*x)^(m + 1))/(1 + c^2*x^(2*n)), x], x] /; Fr
eeQ[{a, b, c, d, m, n}, x] && NeQ[m, -1]
```

Rubi steps

$$\begin{aligned}\int \frac{\cot^{-1}\left(\sqrt{x}\right)}{x^{5/2}}\,dx &= -\frac{2\cot^{-1}\left(\sqrt{x}\right)}{3x^{3/2}}-\frac{1}{3}\int \frac{1}{x^2(1+x)}\,dx\\ &= -\frac{2\cot^{-1}\left(\sqrt{x}\right)}{3x^{3/2}}-\frac{1}{3}\int \left(\frac{1}{x^2}-\frac{1}{x}+\frac{1}{1+x}\right)dx\\ &= \frac{1}{3x}-\frac{2\cot^{-1}\left(\sqrt{x}\right)}{3x^{3/2}}+\frac{\log(x)}{3}-\frac{1}{3}\log(1+x)\end{aligned}$$

Mathematica [A] time = 0.02, size = 29, normalized size = 0.78

$$\frac{1}{3}\left(-\frac{2\cot^{-1}\left(\sqrt{x}\right)}{x^{3/2}}+\frac{1}{x}+\log(x)-\log(x+1)\right)$$

Antiderivative was successfully verified.

[In] Integrate[ArcCot[Sqrt[x]]/x^(5/2),x]

[Out] (x^(-1) - (2*ArcCot[Sqrt[x]])/x^(3/2) + Log[x] - Log[1 + x])/3

fricas [A] time = 0.47, size = 33, normalized size = 0.89

$$-\frac{x^{2} \log\left(x+1\right) - x^{2} \log\left(x\right) + 2 \sqrt{x} \operatorname{arccot}\left(\sqrt{x}\right) - x}{3 x^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(x^(1/2))/x^(5/2),x, algorithm="fricas")
[Out] -1/3*(x^2*log(x + 1) - x^2*log(x) + 2*sqrt(x)*arccot(sqrt(x)) - x)/x^2
```

giac [A] time = 0.13, size = 23, normalized size = 0.62

$$-\frac{2 \arctan\left(\frac{1}{\sqrt{x}}\right)}{3 x^{\frac{3}{2}}} + \frac{1}{3 x} - \frac{1}{3} \log\left(\frac{1}{x} + 1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(x^(1/2))/x^(5/2),x, algorithm="giac")
[Out] -2/3*arctan(1/sqrt(x))/x^(3/2) + 1/3/x - 1/3*log(1/x + 1)
```

maple [A] time = 0.05, size = 26, normalized size = 0.70

$$\frac{1}{3x} - \frac{2 \operatorname{arccot}\left(\sqrt{x}\right)}{3x^{\frac{3}{2}}} + \frac{\ln(x)}{3} - \frac{\ln\left(x+1\right)}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arccot(x^(1/2))/x^(5/2),x)
[Out] 1/3/x-2/3*arccot(x^(1/2))/x^(3/2)+1/3*ln(x)-1/3*ln(x+1)
```

maxima [A] time = 0.32, size = 25, normalized size = 0.68

$$-\frac{2 \operatorname{arccot}\left(\sqrt{x}\right)}{3 x^{\frac{3}{2}}} + \frac{1}{3 x} - \frac{1}{3} \log\left(x+1\right) + \frac{1}{3} \log\left(x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(x^(1/2))/x^(5/2),x, algorithm="maxima")
[Out] -2/3*arccot(sqrt(x))/x^(3/2) + 1/3/x - 1/3*log(x + 1) + 1/3*log(x)
```

mupad [B] time = 0.65, size = 27, normalized size = 0.73

$$\frac{2 \ln\left(\sqrt{x}\right)}{3} - \frac{\ln\left(x+1\right)}{3} - \frac{2 \operatorname{acot}\left(\sqrt{x}\right)}{3 x^{3/2}} + \frac{1}{3 x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(acot(x^(1/2))/x^(5/2),x)
[Out] (2*log(x^(1/2)))/3 - log(x + 1)/3 - (2*acot(x^(1/2)))/(3*x^(3/2)) + 1/(3*x)
```

sympy [B] time = 4.92, size = 143, normalized size = 3.86

$$-\frac{2x^{\frac{3}{2}} \operatorname{acot}\left(\sqrt{x}\right)}{3x^{3} + 3x^{2}} - \frac{2\sqrt{x} \operatorname{acot}\left(\sqrt{x}\right)}{3x^{3} + 3x^{2}} + \frac{x^{3} \log\left(x\right)}{3x^{3} + 3x^{2}} - \frac{x^{3} \log\left(x+1\right)}{3x^{3} + 3x^{2}} + \frac{x^{2} \log\left(x\right)}{3x^{3} + 3x^{2}} - \frac{x^{2} \log\left(x+1\right)}{3x^{3} + 3x^{2}} + \frac{x^{2}}{3x^{3} + 3x^{2}} + \frac{x}{3x^{3} + 3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(acot(x**(1/2))/x**(5/2),x)
```

```
[Out] -2*x**(3/2)*acot(sqrt(x))/(3*x**3 + 3*x**2) - 2*sqrt(x)*acot(sqrt(x))/(3*x*
*3 + 3*x**2) + x**3*log(x)/(3*x**3 + 3*x**2) - x**3*log(x + 1)/(3*x**3 + 3*
x**2) + x**2*log(x)/(3*x**3 + 3*x**2) - x**2*log(x + 1)/(3*x**3 + 3*x**2) +
 x**2/(3*x**3 + 3*x**2) + x/(3*x**3 + 3*x**2)
```

3.96 $\int \cot^{-1}\left(\frac{1}{x}\right) dx$

Optimal. Leaf size=17

$$x\cot^{-1}\left(\frac{1}{x}\right)-\frac{1}{2}\log\left(x^2+1\right)$$

```
[Out] x*arccot(1/x)-1/2*ln(x^2+1)
```

Rubi [A] time = 0.01, antiderivative size = 17, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 4, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.750, Rules used = {5028, 263, 260}

$$x\cot^{-1}\left(\frac{1}{x}\right)-\frac{1}{2}\log\left(x^2+1\right)$$

Antiderivative was successfully verified.

```
[In] Int[ArcCot[x^(-1)],x]
[Out] x*ArcCot[x^(-1)] - Log[1 + x^2]/2
```

Rule 260

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

Rule 263

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Int[x^(m + n*p)*
(b + a/x^n)^p, x] /; FreeQ[{a, b, m, n}, x] && IntegerQ[p] && NegQ[n]
```

Rule 5028

```
Int[ArcCot[(c_.)*(x_)^(n_)], x_Symbol] :> Simp[x*ArcCot[c*x^n], x] + Dist[c
*n, Int[x^n/(1 + c^2*x^(2*n)), x], x] /; FreeQ[{c, n}, x]
```

Rubi steps

$$\begin{aligned}\int \cot^{-1}\left(\frac{1}{x}\right) dx &= x\cot^{-1}\left(\frac{1}{x}\right)-\int \frac{1}{\left(1+\frac{1}{x^2}\right)x}\,dx\\ &= x\cot^{-1}\left(\frac{1}{x}\right)-\int \frac{x}{1+x^2}\,dx\\ &= x\cot^{-1}\left(\frac{1}{x}\right)-\frac{1}{2}\log\left(1+x^2\right)\end{aligned}$$

Mathematica [A] time = 0.00, size = 17, normalized size = 1.00

$$x\cot^{-1}\left(\frac{1}{x}\right)-\frac{1}{2}\log\left(x^2+1\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcCot[x^(-1)],x]
[Out] x*ArcCot[x^(-1)] - Log[1 + x^2]/2
```

fricas [A] time = 0.48, size = 15, normalized size = 0.88

$$x \operatorname{arccot}\left(\frac{1}{x}\right) - \frac{1}{2} \log\left(x^2 + 1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(1/x),x, algorithm="fricas")
[Out] x*arccot(1/x) - 1/2*log(x^2 + 1)
```

giac [A] time = 0.12, size = 13, normalized size = 0.76

$$x \arctan(x) - \frac{1}{2} \log\left(x^2 + 1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(1/x),x, algorithm="giac")
[Out] x*arctan(x) - 1/2*log(x^2 + 1)
```

maple [A] time = 0.07, size = 20, normalized size = 1.18

$$x \operatorname{arccot}\left(\frac{1}{x}\right) + \ln\left(\frac{1}{x}\right) - \frac{\ln\left(\frac{1}{x^2} + 1\right)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arccot(1/x),x)
[Out] x*arccot(1/x)+ln(1/x)-1/2*ln(1/x^2+1)
```

maxima [A] time = 0.33, size = 15, normalized size = 0.88

$$x \operatorname{arccot}\left(\frac{1}{x}\right) - \frac{1}{2} \log\left(x^2 + 1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(1/x),x, algorithm="maxima")
[Out] x*arccot(1/x) - 1/2*log(x^2 + 1)
```

mupad [B] time = 0.06, size = 15, normalized size = 0.88

$$x \operatorname{acot}\left(\frac{1}{x}\right) - \frac{\ln\left(x^2 + 1\right)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(acot(1/x),x)
[Out] x*acot(1/x) - log(x^2 + 1)/2
```

sympy [A] time = 0.15, size = 14, normalized size = 0.82

$$x \operatorname{acot}\left(\frac{1}{x}\right) - \frac{\log\left(x^2 + 1\right)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(acot(1/x),x)
[Out] x*acot(1/x) - log(x**2 + 1)/2
```

3.97 $\int \frac{\cot^{-1}(ax^n)}{x} dx$

Optimal. Leaf size=47

$$\frac{i\text{Li}_2\left(\frac{ix^{-n}}{a}\right)}{2n}-\frac{i\text{Li}_2\left(-\frac{ix^{-n}}{a}\right)}{2n}$$

```
[Out] -1/2*I*polylog(2,-I/a/(x^n))/n+1/2*I*polylog(2,I/a/(x^n))/n
```

Rubi [A] time = 0.04, antiderivative size = 47, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.300, Rules used = {5032, 4849, 2391}

$$\frac{i\text{PolyLog}\left(2,\frac{ix^{-n}}{a}\right)}{2n}-\frac{i\text{PolyLog}\left(2,-\frac{ix^{-n}}{a}\right)}{2n}$$

Antiderivative was successfully verified.

```
[In] Int[ArcCot[a*x^n]/x,x]
```

```
[Out] ((-I/2)*PolyLog[2, (-I)/(a*x^n)])/n + ((I/2)*PolyLog[2, I/(a*x^n)])/n
```

Rule 2391

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

Rule 4849

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))/(x_), x_Symbol] :> Simp[a*Log[x], x]
 + (Dist[(I*b)/2, Int[Log[1 - I/(c*x)]/x, x], x] - Dist[(I*b)/2, Int[Log[1
+ I/(c*x)]/x, x], x]) /; FreeQ[{a, b, c}, x]
```

Rule 5032

```
Int[((a_.) + ArcCot[(c_.)*(x_)^(n_)]*(b_.))^(p_.)/(x_), x_Symbol] :> Dist[1
/n, Subst[Int[(a + b*ArcCot[c*x])^p/x, x], x, x^n], x] /; FreeQ[{a, b, c, n
}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{\cot^{-1}(ax^n)}{x}\,dx &= \frac{\text{Subst}\left(\int \frac{\cot^{-1}(ax)}{x}\,dx,x,x^n\right)}{n}\\
&= \frac{i\,\text{Subst}\left(\int \frac{\log\left(1-\frac{i}{ax}\right)}{x}\,dx,x,x^n\right)}{2n}-\frac{i\,\text{Subst}\left(\int \frac{\log\left(1+\frac{i}{ax}\right)}{x}\,dx,x,x^n\right)}{2n}\\
&= -\frac{i\text{Li}_2\left(-\frac{ix^{-n}}{a}\right)}{2n}+\frac{i\text{Li}_2\left(\frac{ix^{-n}}{a}\right)}{2n}
\end{aligned}$$

Mathematica [A] time = 0.02, size = 40, normalized size = 0.85

$$-\frac{i\left(\text{Li}_2\left(-\frac{ix^{-n}}{a}\right)-\text{Li}_2\left(\frac{ix^{-n}}{a}\right)\right)}{2n}$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcCot[a*x^n]/x,x]
```

```
[Out] ((-1/2*I)*(PolyLog[2, (-I)/(a*x^n)] - PolyLog[2, I/(a*x^n)]))/n
```

fricas [A] time = 2.58, size = 63, normalized size = 1.34

$$\frac{2\,n\operatorname{arccot}\left(ax^{n}\right)\log(x) - i\,n\log\left(i\,ax^{n}+1\right)\log(x) + i\,n\log\left(-i\,ax^{n}+1\right)\log(x) + i\,\mathrm{Li}_2\left(i\,ax^{n}\right) - i\,\mathrm{Li}_2\left(-i\,ax^{n}\right)}{2\,n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(a*x^n)/x,x, algorithm="fricas")
```

```
[Out] 1/2*(2*n*arccot(a*x^n)*log(x) - I*n*log(I*a*x^n + 1)*log(x) + I*n*log(-I*a*
x^n + 1)*log(x) + I*dilog(I*a*x^n) - I*dilog(-I*a*x^n))/n
```

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

$$\int \frac{\operatorname{arccot}\left(ax^{n}\right)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(a*x^n)/x,x, algorithm="giac")
```

```
[Out] integrate(arccot(a*x^n)/x, x)
```

maple [B] time = 0.06, size = 94, normalized size = 2.00

$$\frac{\ln\left(a\,x^{n}\right)\operatorname{arccot}\left(a\,x^{n}\right)}{n} - \frac{i\ln\left(a\,x^{n}\right)\ln\left(1+ia\,x^{n}\right)}{2n} + \frac{i\ln\left(a\,x^{n}\right)\ln\left(1-ia\,x^{n}\right)}{2n} - \frac{i\operatorname{dilog}\left(1+ia\,x^{n}\right)}{2n} + \frac{i\operatorname{dilog}\left(1-ia\,x^{n}\right)}{2n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arccot(a*x^n)/x,x)
```

```
[Out] 1/n*ln(a*x^n)*arccot(a*x^n)-1/2*I/n*ln(a*x^n)*ln(1+I*a*x^n)+1/2*I/n*ln(a*x^
n)*ln(1-I*a*x^n)-1/2*I/n*dilog(1+I*a*x^n)+1/2*I/n*dilog(1-I*a*x^n)
```

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

$$an\int \frac{x^{n}\log(x)}{a^{2}xx^{2\,n}+x}\,dx + \arctan\left(\frac{1}{ax^{n}}\right)\log(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(a*x^n)/x,x, algorithm="maxima")
```

```
[Out] a*n*integrate(x^n*log(x)/(a^2*x*x^(2*n) + x), x) + arctan(1/(a*x^n))*log(x)
```

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

$$\int \frac{\mathrm{acot}\left(a\,x^{n}\right)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(acot(a*x^n)/x,x)
```

```
[Out] int(acot(a*x^n)/x, x)
```

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

$$\int \frac{\operatorname{acot}\left(ax^{n}\right)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(acot(a*x**n)/x,x)
```

```
[Out] Integral(acot(a*x**n)/x, x)
```

3.98 $\int \frac{\cot^{-1}(ax^5)}{x} \, dx$

Optimal. Leaf size=37

$$\frac{1}{10} i \text{Li}_2\left(\frac{i}{ax^5}\right) - \frac{1}{10} i \text{Li}_2\left(-\frac{i}{ax^5}\right)$$

```
[Out] -1/10*I*polylog(2,-I/a/x^5)+1/10*I*polylog(2,I/a/x^5)
```

Rubi [A] time = 0.03, antiderivative size = 37, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.300, Rules used = {5032, 4849, 2391}

$$\frac{1}{10} i \text{PolyLog}\left(2, \frac{i}{ax^5}\right) - \frac{1}{10} i \text{PolyLog}\left(2, -\frac{i}{ax^5}\right)$$

Antiderivative was successfully verified.

```
[In] Int[ArcCot[a*x^5]/x,x]
```

```
[Out] (-I/10)*PolyLog[2, (-I)/(a*x^5)] + (I/10)*PolyLog[2, I/(a*x^5)]
```

Rule 2391

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

Rule 4849

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))/(x_), x_Symbol] :> Simp[a*Log[x], x]
 + (Dist[(I*b)/2, Int[Log[1 - I/(c*x)]/x, x], x] - Dist[(I*b)/2, Int[Log[1
+ I/(c*x)]/x, x], x]) /; FreeQ[{a, b, c}, x]
```

Rule 5032

```
Int[((a_.) + ArcCot[(c_.)*(x_)^(n_)]*(b_.))^(p_.)/(x_), x_Symbol] :> Dist[1
/n, Subst[Int[(a + b*ArcCot[c*x])^p/x, x], x, x^n], x] /; FreeQ[{a, b, c, n
}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{\cot^{-1}\left(ax^5\right)}{x} \, dx &= \frac{1}{5} \text{Subst}\left(\int \frac{\cot^{-1}(ax)}{x} \, dx, x, x^5\right)\\
&= \frac{1}{10} i \,\text{Subst}\left(\int \frac{\log\left(1-\frac{i}{ax}\right)}{x} \, dx, x, x^5\right) - \frac{1}{10} i \,\text{Subst}\left(\int \frac{\log\left(1+\frac{i}{ax}\right)}{x} \, dx, x, x^5\right)\\
&= -\frac{1}{10} i \text{Li}_2\left(-\frac{i}{ax^5}\right) + \frac{1}{10} i \text{Li}_2\left(\frac{i}{ax^5}\right)
\end{aligned}$$

Mathematica [A] time = 0.01, size = 37, normalized size = 1.00

$$\frac{1}{10} i \text{Li}_2\left(\frac{i}{ax^5}\right) - \frac{1}{10} i \text{Li}_2\left(-\frac{i}{ax^5}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcCot[a*x^5]/x,x]
```

```
[Out] (-1/10*I)*PolyLog[2, (-I)/(a*x^5)] + (I/10)*PolyLog[2, I/(a*x^5)]
```

fricas [F] time = 1.07, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\operatorname{arccot}\left(ax^5\right)}{x}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(a*x^5)/x,x, algorithm="fricas")
```

```
[Out] integral(arccot(a*x^5)/x, x)
```

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

$$\int \frac{\operatorname{arccot}\left(ax^5\right)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(a*x^5)/x,x, algorithm="giac")
```

```
[Out] integrate(arccot(a*x^5)/x, x)
```

maple [C] time = 0.16, size = 57, normalized size = 1.54

$$\ln(x)\operatorname{arccot}\left(a\,x^5\right)+\frac{\sum_{\_R1=\mathrm{RootOf}\left(\_Z^{10}a^2+1\right)}\frac{\ln(x)\ln\left(\frac{\_R1-x}{\_R1}\right)+\mathrm{dilog}\left(\frac{\_R1-x}{\_R1}\right)}{\_R1^5}}{2a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arccot(a*x^5)/x,x)
```

```
[Out] ln(x)*arccot(a*x^5)+1/2/a*sum(1/_R1^5*(ln(x)*ln((_R1-x)/_R1)+dilog((_R1-x)/
_R1)),_R1=RootOf(_Z^10*a^2+1))
```

maxima [B] time = 0.56, size = 68, normalized size = 1.84

$$\frac{1}{20}\,\pi\log\left(a^2x^{10}+1\right)-\frac{1}{5}\,\arctan\left(ax^5\right)\log\left(ax^5\right)+\operatorname{arccot}\left(ax^5\right)\log(x)+\arctan\left(ax^5\right)\log(x)+\frac{1}{10}i\,\mathrm{Li}_2\left(i\,ax^5+1\right)-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(a*x^5)/x,x, algorithm="maxima")
```

```
[Out] 1/20*pi*log(a^2*x^10 + 1) - 1/5*arctan(a*x^5)*log(a*x^5) + arccot(a*x^5)*lo
g(x) + arctan(a*x^5)*log(x) + 1/10*I*dilog(I*a*x^5 + 1) - 1/10*I*dilog(-I*a
*x^5 + 1)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\mathrm{acot}\left(a\,x^5\right)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(acot(a*x^5)/x,x)
```

```
[Out] int(acot(a*x^5)/x, x)
```

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

$$\int \frac{\operatorname{acot}\left(ax^{5}\right)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(acot(a*x**5)/x,x)
```

```
[Out] Integral(acot(a*x**5)/x, x)
```

3.99 $\int x^3 \cot^{-1}(a+bx)\,dx$

Optimal. Leaf size=106

$$\frac{a\left(1-a^2\right)\log\left((a+bx)^2+1\right)}{2b^4}-\frac{\left(1-6a^2\right)x}{4b^3}+\frac{\left(a^4-6a^2+1\right)\tan^{-1}(a+bx)}{4b^4}+\frac{(a+bx)^3}{12b^4}-\frac{a(a+bx)^2}{2b^4}+\frac{1}{4}x^4\cot^{-1}(a$$

```
[Out] -1/4*(-6*a^2+1)*x/b^3-1/2*a*(b*x+a)^2/b^4+1/12*(b*x+a)^3/b^4+1/4*x^4*arccot
(b*x+a)+1/4*(a^4-6*a^2+1)*arctan(b*x+a)/b^4+1/2*a*(-a^2+1)*ln(1+(b*x+a)^2)/
b^4
```

Rubi [A] time = 0.11, antiderivative size = 106, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.600, Rules used = {5048, 4863, 702, 635, 203, 260}

$$-\frac{\left(1-6a^2\right)x}{4b^3}+\frac{a\left(1-a^2\right)\log\left((a+bx)^2+1\right)}{2b^4}+\frac{\left(a^4-6a^2+1\right)\tan^{-1}(a+bx)}{4b^4}+\frac{(a+bx)^3}{12b^4}-\frac{a(a+bx)^2}{2b^4}+\frac{1}{4}x^4\cot^{-1}($$

Antiderivative was successfully verified.

```
[In] Int[x^3*ArcCot[a + b*x],x]
```

```
[Out] -((1 - 6*a^2)*x)/(4*b^3) - (a*(a + b*x)^2)/(2*b^4) + (a + b*x)^3/(12*b^4) +
 (x^4*ArcCot[a + b*x])/4 + ((1 - 6*a^2 + a^4)*ArcTan[a + b*x])/(4*b^4) + (a
*(1 - a^2)*Log[1 + (a + b*x)^2])/(2*b^4)
```

Rule 203

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

Rule 260

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

Rule 635

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> Dist[d, Int[1/(
a + c*x^2), x], x] + Dist[e, Int[x/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e
}, x] &&  !NiceSqrtQ[-(a*c)]
```

Rule 702

```
Int[((d_) + (e_.)*(x_))^(m_)/((a_) + (c_.)*(x_)^2), x_Symbol] :> Int[Polyno
mialDivide[(d + e*x)^m, a + c*x^2, x], x] /; FreeQ[{a, c, d, e}, x] && NeQ[
c*d^2 + a*e^2, 0] && IGtQ[m, 1] && (NeQ[d, 0] || GtQ[m, 2])
```

Rule 4863

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))*((d_) + (e_.)*(x_))^(q_.), x_Symbol]
 :> Simp[((d + e*x)^(q + 1)*(a + b*ArcCot[c*x]))/(e*(q + 1)), x] + Dist[(b*
c)/(e*(q + 1)), Int[(d + e*x)^(q + 1)/(1 + c^2*x^2), x], x] /; FreeQ[{a, b,
 c, d, e, q}, x] && NeQ[q, -1]
```

Rule 5048

```
Int[((a_.) + ArcCot[(c_) + (d_.)*(x_)]*(b_.))^(p_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
```

```
cCot[x])^p, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, p}, x] && IG
tQ[p, 0]
```

Rubi steps

$$\int x^3 \cot^{-1}(a+bx)\,dx = \frac{\text{Subst}\left(\int \left(-\frac{a}{b}+\frac{x}{b}\right)^3 \cot^{-1}(x)\,dx, x, a+bx\right)}{b}$$

$$= \frac{1}{4}x^4\cot^{-1}(a+bx) + \frac{1}{4}\text{Subst}\left(\int \frac{\left(-\frac{a}{b}+\frac{x}{b}\right)^4}{1+x^2}\,dx, x, a+bx\right)$$

$$= \frac{1}{4}x^4\cot^{-1}(a+bx) + \frac{1}{4}\text{Subst}\left(\int \left(-\frac{1-6a^2}{b^4} - \frac{4ax}{b^4} + \frac{x^2}{b^4} + \frac{1-6a^2+a^4+4a\left(1-a^2\right)x}{b^4\left(1+x^2\right)}\right.\right.$$

$$= -\frac{\left(1-6a^2\right)x}{4b^3} - \frac{a(a+bx)^2}{2b^4} + \frac{(a+bx)^3}{12b^4} + \frac{1}{4}x^4\cot^{-1}(a+bx) + \frac{\text{Subst}\left(\int \frac{1-6a^2+a^4+4a\left(1-a^2\right)}{1+x^2}\right.}{4b^4}$$

$$= -\frac{\left(1-6a^2\right)x}{4b^3} - \frac{a(a+bx)^2}{2b^4} + \frac{(a+bx)^3}{12b^4} + \frac{1}{4}x^4\cot^{-1}(a+bx) + \frac{\left(a\left(1-a^2\right)\right)\text{Subst}\left(\int \frac{x}{1+x^2}\right.}{b^4}$$

$$= -\frac{\left(1-6a^2\right)x}{4b^3} - \frac{a(a+bx)^2}{2b^4} + \frac{(a+bx)^3}{12b^4} + \frac{1}{4}x^4\cot^{-1}(a+bx) + \frac{\left(1-6a^2+a^4\right)\tan^{-1}(a+b}{4b^4}$$

Mathematica [C] time = 0.08, size = 95, normalized size = 0.90

$$\frac{6\left(6a^2-1\right)bx + 6b^4x^4\cot^{-1}(a+bx) + 2(a+bx)^3 - 12a(a+bx)^2 - 3i(a-i)^4\log(-a-bx+i) + 3i(a+i)^4\log(a+}{24b^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^3*ArcCot[a + b*x],x]
```

```
[Out] (6*(-1 + 6*a^2)*b*x - 12*a*(a + b*x)^2 + 2*(a + b*x)^3 + 6*b^4*x^4*ArcCot[a
 + b*x] - (3*I)*(-I + a)^4*Log[I - a - b*x] + (3*I)*(I + a)^4*Log[I + a + b
*x])/(24*b^4)
```

fricas [A] time = 0.70, size = 92, normalized size = 0.87

$$\frac{3\,b^4x^4\,\text{arccot}\,(bx+a) + b^3x^3 - 3\,ab^2x^2 + 3\left(3\,a^2-1\right)bx + 3\left(a^4-6\,a^2+1\right)\arctan(bx+a) - 6\left(a^3-a\right)\log\left(b^2x^2\right.}{12\,b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/12*(3*b^4*x^4*arccot(b*x + a) + b^3*x^3 - 3*a*b^2*x^2 + 3*(3*a^2 - 1)*b*x
 + 3*(a^4 - 6*a^2 + 1)*arctan(b*x + a) - 6*(a^3 - a)*log(b^2*x^2 + 2*a*b*x
+ a^2 + 1))/b^4
```

giac [B] time = 0.98, size = 617, normalized size = 5.82

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/192*(96*a^3*arctan(1/(b*x + a))*tan(1/2*arctan(1/(b*x + a)))^5 + 72*a^2*a
rctan(1/(b*x + a))*tan(1/2*arctan(1/(b*x + a)))^6 + 24*a*arctan(1/(b*x + a)
)*tan(1/2*arctan(1/(b*x + a)))^7 + 3*arctan(1/(b*x + a))*tan(1/2*arctan(1/(
b*x + a)))^8 + 96*a^3*log(16*tan(1/2*arctan(1/(b*x + a)))^2/(tan(1/2*arctan
(1/(b*x + a)))^4 + 2*tan(1/2*arctan(1/(b*x + a)))^2 + 1))*tan(1/2*arctan(1/
(b*x + a)))^4 - 96*a^3*arctan(1/(b*x + a))*tan(1/2*arctan(1/(b*x + a)))^3 +
 144*a^2*arctan(1/(b*x + a))*tan(1/2*arctan(1/(b*x + a)))^4 - 144*a^2*tan(1
/2*arctan(1/(b*x + a)))^5 - 72*a*arctan(1/(b*x + a))*tan(1/2*arctan(1/(b*x
+ a)))^5 - 24*a*tan(1/2*arctan(1/(b*x + a)))^6 - 12*arctan(1/(b*x + a))*tan
(1/2*arctan(1/(b*x + a)))^6 - 2*tan(1/2*arctan(1/(b*x + a)))^7 - 96*a*log(1
6*tan(1/2*arctan(1/(b*x + a)))^2/(tan(1/2*arctan(1/(b*x + a)))^4 + 2*tan(1/
2*arctan(1/(b*x + a)))^2 + 1))*tan(1/2*arctan(1/(b*x + a)))^4 + 72*a^2*arct
an(1/(b*x + a))*tan(1/2*arctan(1/(b*x + a)))^2 + 144*a^2*tan(1/2*arctan(1/(
b*x + a)))^3 + 72*a*arctan(1/(b*x + a))*tan(1/2*arctan(1/(b*x + a)))^3 - 48
*a*tan(1/2*arctan(1/(b*x + a)))^4 - 30*arctan(1/(b*x + a))*tan(1/2*arctan(1
/(b*x + a)))^4 + 30*tan(1/2*arctan(1/(b*x + a)))^5 - 24*a*arctan(1/(b*x + a
))*tan(1/2*arctan(1/(b*x + a))) - 24*a*tan(1/2*arctan(1/(b*x + a)))^2 - 12*
arctan(1/(b*x + a))*tan(1/2*arctan(1/(b*x + a)))^2 - 30*tan(1/2*arctan(1/(b
*x + a)))^3 + 3*arctan(1/(b*x + a)) + 2*tan(1/2*arctan(1/(b*x + a))))/(b^4*
tan(1/2*arctan(1/(b*x + a)))^4)
```

maple [A] time = 0.04, size = 132, normalized size = 1.25

$$-\frac{\ln\left(1+(bx+a)^2\right)a^3}{2b^4}+\frac{\arctan(bx+a)\,a^4}{4b^4}-\frac{3\arctan(bx+a)\,a^2}{2b^4}-\frac{a}{4b^4}+\frac{13a^3}{12b^4}-\frac{x}{4b^3}+\frac{\ln\left(1+(bx+a)^2\right)a}{2b^4}+\text{arcta}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*arccot(b*x+a),x)
```

```
[Out] -1/2/b^4*ln(1+(b*x+a)^2)*a^3+1/4/b^4*arctan(b*x+a)*a^4-3/2/b^4*arctan(b*x+a
)*a^2-1/4/b^4*a+13/12/b^4*a^3-1/4/b^3*x+1/2/b^4*ln(1+(b*x+a)^2)*a+1/4/b^4*a
rctan(b*x+a)+1/4*x^4*arccot(b*x+a)+1/12/b*x^3-1/4/b^2*x^2*a+3/4/b^3*x*a^2
```

maxima [A] time = 0.43, size = 104, normalized size = 0.98

$$\frac{1}{4}x^4\operatorname{arccot}(bx+a)+\frac{1}{12}b\left(\frac{b^2x^3-3abx^2+3\left(3a^2-1\right)x}{b^4}+\frac{3\left(a^4-6a^2+1\right)\arctan\left(\frac{b^2x+ab}{b}\right)}{b^5}-\frac{6\left(a^3-a\right)\log\left(b\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/4*x^4*arccot(b*x + a) + 1/12*b*((b^2*x^3 - 3*a*b*x^2 + 3*(3*a^2 - 1)*x)/b
^4 + 3*(a^4 - 6*a^2 + 1)*arctan((b^2*x + a*b)/b)/b^5 - 6*(a^3 - a)*log(b^2*
x^2 + 2*a*b*x + a^2 + 1)/b^5)
```

mupad [B] time = 0.77, size = 133, normalized size = 1.25

$$\frac{\operatorname{atan}(a+b\,x)}{4\,b^4}+\frac{x^4\operatorname{acot}(a+b\,x)}{4}-\frac{x}{4\,b^3}+\frac{x^3}{12\,b}-\frac{a^3\,\ln\left(a^2+2\,a\,b\,x+b^2\,x^2+1\right)}{2\,b^4}-\frac{3\,a^2\operatorname{atan}(a+b\,x)}{2\,b^4}+\frac{a^4\operatorname{atan}(a+}{4\,b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*acot(a + b*x),x)
```

```
[Out] atan(a + b*x)/(4*b^4) + (x^4*acot(a + b*x))/4 - x/(4*b^3) + x^3/(12*b) - (a
^3*log(a^2 + b^2*x^2 + 2*a*b*x + 1))/(2*b^4) - (3*a^2*atan(a + b*x))/(2*b^4
) + (a^4*atan(a + b*x))/(4*b^4) - (a*x^2)/(4*b^2) + (3*a^2*x)/(4*b^3) + (a*
log(a^2 + b^2*x^2 + 2*a*b*x + 1))/(2*b^4)
```

sympy [A] time = 1.45, size = 155, normalized size = 1.46

$$\begin{cases} -\frac{a^4 \operatorname{acot}(a+bx)}{4b^4} - \frac{a^3 \log\left(a^2+2abx+b^2x^2+1\right)}{2b^4} + \frac{3a^2x}{4b^3} + \frac{3a^2 \operatorname{acot}(a+bx)}{2b^4} - \frac{ax^2}{4b^2} + \frac{a \log\left(a^2+2abx+b^2x^2+1\right)}{2b^4} + \frac{x^4 \operatorname{acot}(a+bx)}{4} + \frac{x^3}{12b} - \frac{x}{4b^3} - \\ \frac{x^4 \operatorname{acot}(a)}{4} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*acot(b*x+a),x)
```

```
[Out] Piecewise((-a**4*acot(a + b*x)/(4*b**4) - a**3*log(a**2 + 2*a*b*x + b**2*x*
*2 + 1)/(2*b**4) + 3*a**2*x/(4*b**3) + 3*a**2*acot(a + b*x)/(2*b**4) - a*x*
*2/(4*b**2) + a*log(a**2 + 2*a*b*x + b**2*x**2 + 1)/(2*b**4) + x**4*acot(a
+ b*x)/4 + x**3/(12*b) - x/(4*b**3) - acot(a + b*x)/(4*b**4), Ne(b, 0)), (x
**4*acot(a)/4, True))
```

3.100 $\int x^2 \cot^{-1}(a+bx)\,dx$

Optimal. Leaf size=80

$$-\frac{(1-3a^2)\log\left((a+bx)^2+1\right)}{6b^3}+\frac{a(3-a^2)\tan^{-1}(a+bx)}{3b^3}+\frac{(a+bx)^2}{6b^3}-\frac{ax}{b^2}+\frac{1}{3}x^3\cot^{-1}(a+bx)$$

```
[Out] -a*x/b^2+1/6*(b*x+a)^2/b^3+1/3*x^3*arccot(b*x+a)+1/3*a*(-a^2+3)*arctan(b*x+
a)/b^3-1/6*(-3*a^2+1)*ln(1+(b*x+a)^2)/b^3
```

Rubi [A] time = 0.08, antiderivative size = 80, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.600, Rules used = {5048, 4863, 702, 635, 203, 260}

$$-\frac{(1-3a^2)\log\left((a+bx)^2+1\right)}{6b^3}+\frac{a(3-a^2)\tan^{-1}(a+bx)}{3b^3}-\frac{ax}{b^2}+\frac{(a+bx)^2}{6b^3}+\frac{1}{3}x^3\cot^{-1}(a+bx)$$

Antiderivative was successfully verified.

```
[In] Int[x^2*ArcCot[a + b*x],x]
```

```
[Out] -((a*x)/b^2) + (a + b*x)^2/(6*b^3) + (x^3*ArcCot[a + b*x])/3 + (a*(3 - a^2)
*ArcTan[a + b*x])/(3*b^3) - ((1 - 3*a^2)*Log[1 + (a + b*x)^2])/(6*b^3)
```

Rule 203

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

Rule 260

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

Rule 635

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> Dist[d, Int[1/(
a + c*x^2), x], x] + Dist[e, Int[x/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e
}, x] && !NiceSqrtQ[-(a*c)]
```

Rule 702

```
Int[((d_) + (e_.)*(x_))^(m_)/((a_) + (c_.)*(x_)^2), x_Symbol] :> Int[Polyno
mialDivide[(d + e*x)^m, a + c*x^2, x], x] /; FreeQ[{a, c, d, e}, x] && NeQ[
c*d^2 + a*e^2, 0] && IGtQ[m, 1] && (NeQ[d, 0] || GtQ[m, 2])
```

Rule 4863

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))*((d_) + (e_.)*(x_))^(q_.), x_Symbol]
 :> Simp[((d + e*x)^(q + 1)*(a + b*ArcCot[c*x]))/(e*(q + 1)), x] + Dist[(b*
c)/(e*(q + 1)), Int[(d + e*x)^(q + 1)/(1 + c^2*x^2), x], x] /; FreeQ[{a, b,
 c, d, e, q}, x] && NeQ[q, -1]
```

Rule 5048

```
Int[((a_.) + ArcCot[(c_) + (d_.)*(x_)]*(b_.))^(p_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cCot[x])^p, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, p}, x] && IG
tQ[p, 0]
```

Rubi steps

$$\int x^2\cot^{-1}(a+bx)\,dx = \frac{\text{Subst}\left(\int \left(-\frac{a}{b}+\frac{x}{b}\right)^2\cot^{-1}(x)\,dx,x,a+bx\right)}{b}$$
$$= \frac{1}{3}x^3\cot^{-1}(a+bx)+\frac{1}{3}\text{Subst}\left(\int \frac{\left(-\frac{a}{b}+\frac{x}{b}\right)^3}{1+x^2}\,dx,x,a+bx\right)$$
$$= \frac{1}{3}x^3\cot^{-1}(a+bx)+\frac{1}{3}\text{Subst}\left(\int \left(-\frac{3a}{b^3}+\frac{x}{b^3}+\frac{a\left(3-a^2\right)-\left(1-3a^2\right)x}{b^3\left(1+x^2\right)}\right)dx,x,a+bx\right)$$
$$= -\frac{ax}{b^2}+\frac{(a+bx)^2}{6b^3}+\frac{1}{3}x^3\cot^{-1}(a+bx)+\frac{\text{Subst}\left(\int \frac{a\left(3-a^2\right)-\left(1-3a^2\right)x}{1+x^2}\,dx,x,a+bx\right)}{3b^3}$$
$$= -\frac{ax}{b^2}+\frac{(a+bx)^2}{6b^3}+\frac{1}{3}x^3\cot^{-1}(a+bx)-\frac{\left(1-3a^2\right)\text{Subst}\left(\int \frac{x}{1+x^2}\,dx,x,a+bx\right)}{3b^3}+\frac{\left(a\left(3-\right.\right.}{}$$
$$= -\frac{ax}{b^2}+\frac{(a+bx)^2}{6b^3}+\frac{1}{3}x^3\cot^{-1}(a+bx)+\frac{a\left(3-a^2\right)\tan^{-1}(a+bx)}{3b^3}-\frac{\left(1-3a^2\right)\log\left(1+(a\right.}{6b^3}$$

Mathematica [C] time = 0.05, size = 114, normalized size = 1.42

$$\frac{\frac{1}{3}b\left(\frac{a+bx}{b}-\frac{a}{b}\right)^3\cot^{-1}(a+bx)+\frac{1}{3}b\left(\frac{(a+bx)^2}{2b^3}-\frac{(1-ia)^3\log(a+bx+i)}{2b^3}-\frac{(1+ia)^3\log(-a-bx+i)}{2b^3}-\frac{3ax}{b^2}\right)}{b}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*ArcCot[a + b*x],x]
```

```
[Out] ((b*(-(a/b) + (a + b*x)/b)^3*ArcCot[a + b*x])/3 + (b*((-3*a*x)/b^2 + (a + b
*x)^2/(2*b^3) - ((1 + I*a)^3*Log[I - a - b*x])/(2*b^3) - ((1 - I*a)^3*Log[I
 + a + b*x])/(2*b^3)))/3)/b
```

fricas [A] time = 2.25, size = 73, normalized size = 0.91

$$\frac{2\,b^3x^3\,\mathrm{arccot}\,(bx+a)+b^2x^2-4\,abx-2\left(a^3-3\,a\right)\arctan\,(bx+a)+\left(3\,a^2-1\right)\log\left(b^2x^2+2\,abx+a^2+1\right)}{6\,b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/6*(2*b^3*x^3*arccot(b*x + a) + b^2*x^2 - 4*a*b*x - 2*(a^3 - 3*a)*arctan(b
*x + a) + (3*a^2 - 1)*log(b^2*x^2 + 2*a*b*x + a^2 + 1))/b^3
```

giac [B] time = 0.85, size = 423, normalized size = 5.29

$$-\frac{12\,a^2\arctan\left(\frac{1}{bx+a}\right)\tan\left(\frac{1}{2}\arctan\left(\frac{1}{bx+a}\right)\right)^4+6\,a\arctan\left(\frac{1}{bx+a}\right)\tan\left(\frac{1}{2}\arctan\left(\frac{1}{bx+a}\right)\right)^5+\arctan\left(\frac{1}{bx+a}\right)\tan\left(\frac{1}{2}\,a\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/24*(12*a^2*arctan(1/(b*x + a))*tan(1/2*arctan(1/(b*x + a)))^4 + 6*a*arct
an(1/(b*x + a))*tan(1/2*arctan(1/(b*x + a)))^5 + arctan(1/(b*x + a))*tan(1/
2*arctan(1/(b*x + a)))^6 + 12*a^2*log(16*tan(1/2*arctan(1/(b*x + a)))^2/(ta
n(1/2*arctan(1/(b*x + a)))^4 + 2*tan(1/2*arctan(1/(b*x + a)))^2 + 1))*tan(1
/2*arctan(1/(b*x + a)))^3 - 12*a^2*arctan(1/(b*x + a))*tan(1/2*arctan(1/(b*
x + a)))^2 + 12*a*arctan(1/(b*x + a))*tan(1/2*arctan(1/(b*x + a)))^3 - 12*a
*tan(1/2*arctan(1/(b*x + a)))^4 - 3*arctan(1/(b*x + a))*tan(1/2*arctan(1/(b
*x + a)))^4 - tan(1/2*arctan(1/(b*x + a)))^5 - 4*log(16*tan(1/2*arctan(1/(b
*x + a)))^2/(tan(1/2*arctan(1/(b*x + a)))^4 + 2*tan(1/2*arctan(1/(b*x + a))
)^2 + 1))*tan(1/2*arctan(1/(b*x + a)))^3 + 6*a*arctan(1/(b*x + a))*tan(1/2*
arctan(1/(b*x + a))) + 12*a*tan(1/2*arctan(1/(b*x + a)))^2 + 3*arctan(1/(b*
x + a))*tan(1/2*arctan(1/(b*x + a)))^2 - 2*tan(1/2*arctan(1/(b*x + a)))^3 -
 arctan(1/(b*x + a)) - tan(1/2*arctan(1/(b*x + a))))/(b^3*tan(1/2*arctan(1/
(b*x + a)))^3)
```

maple [A] time = 0.04, size = 94, normalized size = 1.18

$$\frac{x^3 \operatorname{arccot}(bx+a)}{3}+\frac{x^2}{6b}-\frac{2ax}{3b^2}-\frac{5a^2}{6b^3}+\frac{\ln\left(1+(bx+a)^2\right)a^2}{2b^3}-\frac{\ln\left(1+(bx+a)^2\right)}{6b^3}-\frac{\arctan(bx+a)\,a^3}{3b^3}+\frac{\arctan(bx+}{b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*arccot(b*x+a),x)
```

```
[Out] 1/3*x^3*arccot(b*x+a)+1/6/b*x^2-2/3*a*x/b^2-5/6/b^3*a^2+1/2/b^3*ln(1+(b*x+a
)^2)*a^2-1/6/b^3*ln(1+(b*x+a)^2)-1/3/b^3*arctan(b*x+a)*a^3+1/b^3*arctan(b*x
+a)*a
```

maxima [A] time = 0.44, size = 85, normalized size = 1.06

$$\frac{1}{3}x^3 \operatorname{arccot}(bx+a)+\frac{1}{6}b\left(\frac{bx^2-4ax}{b^3}-\frac{2\left(a^3-3a\right)\arctan\left(\frac{b^2x+ab}{b}\right)}{b^4}+\frac{\left(3a^2-1\right)\log\left(b^2x^2+2abx+a^2+1\right)}{b^4}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/3*x^3*arccot(b*x + a) + 1/6*b*((b*x^2 - 4*a*x)/b^3 - 2*(a^3 - 3*a)*arctan
((b^2*x + a*b)/b)/b^4 + (3*a^2 - 1)*log(b^2*x^2 + 2*a*b*x + a^2 + 1)/b^4)
```

mupad [B] time = 1.34, size = 101, normalized size = 1.26

$$\frac{x^3\,\mathrm{acot}\left(a+b\,x\right)}{3}-\frac{\ln\left(a^2+2\,a\,b\,x+b^2\,x^2+1\right)}{6\,b^3}+\frac{x^2}{6\,b}+\frac{a^2\,\ln\left(a^2+2\,a\,b\,x+b^2\,x^2+1\right)}{2\,b^3}-\frac{a^3\,\mathrm{atan}\left(a+b\,x\right)}{3\,b^3}+\frac{a\,\mathrm{atan}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*acot(a + b*x),x)
```

```
[Out] (x^3*acot(a + b*x))/3 - log(a^2 + b^2*x^2 + 2*a*b*x + 1)/(6*b^3) + x^2/(6*b
) + (a^2*log(a^2 + b^2*x^2 + 2*a*b*x + 1))/(2*b^3) - (a^3*atan(a + b*x))/(3
*b^3) + (a*atan(a + b*x))/b^3 - (2*a*x)/(3*b^2)
```

sympy [A] time = 1.00, size = 117, normalized size = 1.46

$$\begin{cases} \frac{a^3 \operatorname{acot}(a+bx)}{3b^3}+\frac{a^2\log\left(a^2+2abx+b^2x^2+1\right)}{2b^3}-\frac{2ax}{3b^2}-\frac{a \operatorname{acot}(a+bx)}{b^3}+\frac{x^3 \operatorname{acot}(a+bx)}{3}+\frac{x^2}{6b}-\frac{\log\left(a^2+2abx+b^2x^2+1\right)}{6b^3} & \text{for } b \neq 0 \\ \frac{x^3 \operatorname{acot}(a)}{3} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*acot(b*x+a),x)
```

```
[Out] Piecewise((a**3*acot(a + b*x)/(3*b**3) + a**2*log(a**2 + 2*a*b*x + b**2*x**
2 + 1)/(2*b**3) - 2*a*x/(3*b**2) - a*acot(a + b*x)/b**3 + x**3*acot(a + b*x
)/3 + x**2/(6*b) - log(a**2 + 2*a*b*x + b**2*x**2 + 1)/(6*b**3), Ne(b, 0)),
 (x**3*acot(a)/3, True))
```

3.101 $\int x \cot^{-1}(a+bx)\,dx$

Optimal. Leaf size=60

$$-\frac{\left(1-a^2\right)\tan^{-1}(a+bx)}{2b^2}-\frac{a\log\left((a+bx)^2+1\right)}{2b^2}+\frac{1}{2}x^2\cot^{-1}(a+bx)+\frac{x}{2b}$$

```
[Out] 1/2*x/b+1/2*x^2*arccot(b*x+a)-1/2*(-a^2+1)*arctan(b*x+a)/b^2-1/2*a*ln(1+(b*
x+a)^2)/b^2
```

Rubi [A] time = 0.06, antiderivative size = 60, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 8, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.750, Rules used = {5048, 4863, 702, 635, 203, 260}

$$-\frac{\left(1-a^2\right)\tan^{-1}(a+bx)}{2b^2}-\frac{a\log\left((a+bx)^2+1\right)}{2b^2}+\frac{1}{2}x^2\cot^{-1}(a+bx)+\frac{x}{2b}$$

Antiderivative was successfully verified.

```
[In] Int[x*ArcCot[a + b*x],x]
```

```
[Out] x/(2*b) + (x^2*ArcCot[a + b*x])/2 - ((1 - a^2)*ArcTan[a + b*x])/(2*b^2) - (
a*Log[1 + (a + b*x)^2])/(2*b^2)
```

Rule 203

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

Rule 260

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

Rule 635

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> Dist[d, Int[1/(
a + c*x^2), x], x] + Dist[e, Int[x/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e
}, x] &&  !NiceSqrtQ[-(a*c)]
```

Rule 702

```
Int[((d_) + (e_.)*(x_))^(m_)/((a_) + (c_.)*(x_)^2), x_Symbol] :> Int[Polyno
mialDivide[(d + e*x)^m, a + c*x^2, x], x] /; FreeQ[{a, c, d, e}, x] && NeQ[
c*d^2 + a*e^2, 0] && IGtQ[m, 1] && (NeQ[d, 0] || GtQ[m, 2])
```

Rule 4863

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))*((d_) + (e_.)*(x_))^(q_.), x_Symbol]
 :> Simp[((d + e*x)^(q + 1)*(a + b*ArcCot[c*x]))/(e*(q + 1)), x] + Dist[(b*
c)/(e*(q + 1)), Int[(d + e*x)^(q + 1)/(1 + c^2*x^2), x], x] /; FreeQ[{a, b,
 c, d, e, q}, x] && NeQ[q, -1]
```

Rule 5048

```
Int[((a_.) + ArcCot[(c_) + (d_.)*(x_)]*(b_.))^(p_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[(((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cCot[x])^p, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, p}, x] && IG
tQ[p, 0]
```

Rubi steps

$$\int x\cot^{-1}(a+bx)\,dx=\frac{\text{Subst}\left(\int\left(-\frac{a}{b}+\frac{x}{b}\right)\cot^{-1}(x)\,dx,x,a+bx\right)}{b}$$
$$=\frac{1}{2}x^2\cot^{-1}(a+bx)+\frac{1}{2}\text{Subst}\left(\int\frac{\left(-\frac{a}{b}+\frac{x}{b}\right)^2}{1+x^2}\,dx,x,a+bx\right)$$
$$=\frac{1}{2}x^2\cot^{-1}(a+bx)+\frac{1}{2}\text{Subst}\left(\int\left(\frac{1}{b^2}-\frac{1-a^2+2ax}{b^2\left(1+x^2\right)}\right)dx,x,a+bx\right)$$
$$=\frac{x}{2b}+\frac{1}{2}x^2\cot^{-1}(a+bx)-\frac{\text{Subst}\left(\int\frac{1-a^2+2ax}{1+x^2}\,dx,x,a+bx\right)}{2b^2}$$
$$=\frac{x}{2b}+\frac{1}{2}x^2\cot^{-1}(a+bx)-\frac{a\,\text{Subst}\left(\int\frac{x}{1+x^2}\,dx,x,a+bx\right)}{b^2}-\frac{\left(1-a^2\right)\text{Subst}\left(\int\frac{1}{1+x^2}\,dx,x,a\right.}{2b^2}$$
$$=\frac{x}{2b}+\frac{1}{2}x^2\cot^{-1}(a+bx)-\frac{\left(1-a^2\right)\tan^{-1}(a+bx)}{2b^2}-\frac{a\log\left(1+(a+bx)^2\right)}{2b^2}$$

Mathematica [C] time = 0.04, size = 90, normalized size = 1.50

$$\frac{ia^2\log(a+bx+i)+2b^2x^2\cot^{-1}(a+bx)-2a\log(a+bx+i)-i(a-i)^2\log(-a-bx+i)-i\log(a+bx+i)+2b}{4b^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[x*ArcCot[a + b*x],x]
```

```
[Out] (2*b*x + 2*b^2*x^2*ArcCot[a + b*x] - I*(-I + a)^2*Log[I - a - b*x] - I*Log[
I + a + b*x] - 2*a*Log[I + a + b*x] + I*a^2*Log[I + a + b*x])/(4*b^2)
```

fricas [A] time = 1.05, size = 55, normalized size = 0.92

$$\frac{b^2x^2\operatorname{arccot}(bx+a)+bx+\left(a^2-1\right)\arctan(bx+a)-a\log\left(b^2x^2+2\,abx+a^2+1\right)}{2\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*arccot(b*x+a),x, algorithm="fricas")
```

```
[Out] 1/2*(b^2*x^2*arccot(b*x + a) + b*x + (a^2 - 1)*arctan(b*x + a) - a*log(b^2*
x^2 + 2*a*b*x + a^2 + 1))/b^2
```

giac [B] time = 0.27, size = 210, normalized size = 3.50

$$4\,a\arctan\left(\frac{1}{bx+a}\right)\tan\left(\frac{1}{2}\arctan\left(\frac{1}{bx+a}\right)\right)^3+\arctan\left(\frac{1}{bx+a}\right)\tan\left(\frac{1}{2}\arctan\left(\frac{1}{bx+a}\right)\right)^4+4\,a\log\left(\frac{16\tan\left(\frac{1}{2}\operatorname{arcta}\right.}{\tan\left(\frac{1}{2}\arctan\left(\frac{1}{bx+a}\right)\right)^4+2\operatorname{ta}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*arccot(b*x+a),x, algorithm="giac")
```

```
[Out] 1/8*(4*a*arctan(1/(b*x + a))*tan(1/2*arctan(1/(b*x + a)))^3 + arctan(1/(b*x
 + a))*tan(1/2*arctan(1/(b*x + a)))^4 + 4*a*log(16*tan(1/2*arctan(1/(b*x +
a)))^2/(tan(1/2*arctan(1/(b*x + a)))^4 + 2*tan(1/2*arctan(1/(b*x + a)))^2 +
```

```
1))*tan(1/2*arctan(1/(b*x + a)))^2 - 4*a*arctan(1/(b*x + a))*tan(1/2*arcta
n(1/(b*x + a))) + 2*arctan(1/(b*x + a))*tan(1/2*arctan(1/(b*x + a)))^2 - 2*
tan(1/2*arctan(1/(b*x + a)))^3 + arctan(1/(b*x + a)) + 2*tan(1/2*arctan(1/(
b*x + a))))/(b^2*tan(1/2*arctan(1/(b*x + a)))^2)
```

maple [A] time = 0.04, size = 66, normalized size = 1.10

$$\frac{x^2 \operatorname{arccot}(bx+a)}{2} - \frac{\operatorname{arccot}(bx+a)\, a^2}{2b^2} + \frac{x}{2b} + \frac{a}{2b^2} - \frac{a \ln\left(1+(bx+a)^2\right)}{2b^2} - \frac{\arctan(bx+a)}{2b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*arccot(b*x+a),x)
```

```
[Out] 1/2*x^2*arccot(b*x+a)-1/2/b^2*arccot(b*x+a)*a^2+1/2*x/b+1/2/b^2*a-1/2*a*ln(
1+(b*x+a)^2)/b^2-1/2/b^2*arctan(b*x+a)
```

maxima [A] time = 0.43, size = 68, normalized size = 1.13

$$\frac{1}{2}\, x^2 \operatorname{arccot}(bx+a) + \frac{1}{2}\, b \left(\frac{x}{b^2} + \frac{\left(a^2-1\right) \arctan\left(\frac{b^2x+ab}{b}\right)}{b^3} - \frac{a \log\left(b^2x^2 + 2\,abx + a^2 + 1\right)}{b^3} \right)$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/2*x^2*arccot(b*x + a) + 1/2*b*(x/b^2 + (a^2 - 1)*arctan((b^2*x + a*b)/b)/
b^3 - a*log(b^2*x^2 + 2*a*b*x + a^2 + 1)/b^3)
```

mupad [B] time = 0.97, size = 61, normalized size = 1.02

$$\frac{x^2 \operatorname{acot}(a+b\,x)}{2} + \frac{\frac{\operatorname{acot}(a+b\,x)}{2} + \frac{b\,x}{2} - \frac{a^2 \operatorname{acot}(a+b\,x)}{2} - \frac{a\,\ln\left(a^2+2\,a\,b\,x+b^2\,x^2+1\right)}{2}}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*acot(a + b*x),x)
```

```
[Out] (x^2*acot(a + b*x))/2 + (acot(a + b*x)/2 + (b*x)/2 - (a^2*acot(a + b*x))/2
- (a*log(a^2 + b^2*x^2 + 2*a*b*x + 1))/2)/b^2
```

sympy [A] time = 0.61, size = 78, normalized size = 1.30

$$\begin{cases} -\frac{a^2 \operatorname{acot}(a+bx)}{2b^2} - \frac{a \log\left(a^2+2abx+b^2x^2+1\right)}{2b^2} + \frac{x^2 \operatorname{acot}(a+bx)}{2} + \frac{x}{2b} + \frac{\operatorname{acot}(a+bx)}{2b^2} & \text{for}\ b \neq 0 \\ \frac{x^2 \operatorname{acot}(a)}{2} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*acot(b*x+a),x)
```

```
[Out] Piecewise((-a**2*acot(a + b*x)/(2*b**2) - a*log(a**2 + 2*a*b*x + b**2*x**2
+ 1)/(2*b**2) + x**2*acot(a + b*x)/2 + x/(2*b) + acot(a + b*x)/(2*b**2), Ne
(b, 0)), (x**2*acot(a)/2, True))
```

3.102 $\int \cot^{-1}(a+bx)\,dx$

Optimal. Leaf size=33

$$\frac{\log\left((a+bx)^2+1\right)}{2b}+\frac{(a+bx)\cot^{-1}(a+bx)}{b}$$

```
[Out] (b*x+a)*arccot(b*x+a)/b+1/2*ln(1+(b*x+a)^2)/b
```

Rubi [A] time = 0.01, antiderivative size = 33, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 6, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.500, Rules used = {5040, 4847, 260}

$$\frac{\log\left((a+bx)^2+1\right)}{2b}+\frac{(a+bx)\cot^{-1}(a+bx)}{b}$$

Antiderivative was successfully verified.

```
[In] Int[ArcCot[a + b*x],x]
```

```
[Out] ((a + b*x)*ArcCot[a + b*x])/b + Log[1 + (a + b*x)^2]/(2*b)
```

Rule 260

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

Rule 4847

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b*Ar
cCot[c*x])^p, x] + Dist[b*c*p, Int[(x*(a + b*ArcCot[c*x])^(p - 1))/(1 + c^2
*x^2), x], x] /; FreeQ[{a, b, c}, x] && IGtQ[p, 0]
```

Rule 5040

```
Int[((a_.) + ArcCot[(c_) + (d_.)*(x_)]*(b_.))^(p_.), x_Symbol] :> Dist[1/d,
 Subst[Int[(a + b*ArcCot[x])^p, x], x, c + d*x], x] /; FreeQ[{a, b, c, d},
x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int \cot^{-1}(a+bx)\,dx &= \frac{\text{Subst}\left(\int \cot^{-1}(x)\,dx,x,a+bx\right)}{b}\\ &= \frac{(a+bx)\cot^{-1}(a+bx)}{b}+\frac{\text{Subst}\left(\int \frac{x}{1+x^2}\,dx,x,a+bx\right)}{b}\\ &= \frac{(a+bx)\cot^{-1}(a+bx)}{b}+\frac{\log\left(1+(a+bx)^2\right)}{2b}\end{aligned}$$

Mathematica [A] time = 0.02, size = 44, normalized size = 1.33

$$\frac{\log\left(a^2+2abx+b^2x^2+1\right)-2a\tan^{-1}(a+bx)}{2b}+x\cot^{-1}(a+bx)$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcCot[a + b*x],x]
```

```
[Out] x*ArcCot[a + b*x] + (-2*a*ArcTan[a + b*x] + Log[1 + a^2 + 2*a*b*x + b^2*x^2
])/(2*b)
```

fricas [A] time = 0.59, size = 43, normalized size = 1.30

$$\frac{2\,bx\,\mathrm{arccot}\left(bx+a\right)-2\,a\arctan\left(bx+a\right)+\log\left(b^{2}x^{2}+2\,abx+a^{2}+1\right)}{2\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(b*x+a),x, algorithm="fricas")
```

```
[Out] 1/2*(2*b*x*arccot(b*x + a) - 2*a*arctan(b*x + a) + log(b^2*x^2 + 2*a*b*x +
a^2 + 1))/b
```

giac [B] time = 0.19, size = 111, normalized size = 3.36

$$-\frac{\arctan\left(\frac{1}{bx+a}\right)\tan\left(\frac{1}{2}\arctan\left(\frac{1}{bx+a}\right)\right)^{2}+\log\left(\frac{16\tan\left(\frac{1}{2}\arctan\left(\frac{1}{bx+a}\right)\right)^{2}}{\tan\left(\frac{1}{2}\arctan\left(\frac{1}{bx+a}\right)\right)^{4}+2\tan\left(\frac{1}{2}\arctan\left(\frac{1}{bx+a}\right)\right)^{2}+1}\right)\tan\left(\frac{1}{2}\arctan\left(\frac{1}{bx+a}\right)\right)}{2\,b\tan\left(\frac{1}{2}\arctan\left(\frac{1}{bx+a}\right)\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(b*x+a),x, algorithm="giac")
```

```
[Out] -1/2*(arctan(1/(b*x + a))*tan(1/2*arctan(1/(b*x + a)))^2 + log(16*tan(1/2*a
rctan(1/(b*x + a)))^2/(tan(1/2*arctan(1/(b*x + a)))^4 + 2*tan(1/2*arctan(1/
(b*x + a)))^2 + 1))*tan(1/2*arctan(1/(b*x + a))) - arctan(1/(b*x + a)))/(b*
tan(1/2*arctan(1/(b*x + a))))
```

maple [A] time = 0.04, size = 36, normalized size = 1.09

$$x\,\mathrm{arccot}\left(bx+a\right)+\frac{\mathrm{arccot}\left(bx+a\right)a}{b}+\frac{\ln\left(1+\left(bx+a\right)^{2}\right)}{2b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arccot(b*x+a),x)
```

```
[Out] x*arccot(b*x+a)+1/b*arccot(b*x+a)*a+1/2*ln(1+(b*x+a)^2)/b
```

maxima [A] time = 0.37, size = 29, normalized size = 0.88

$$\frac{2\left(bx+a\right)\mathrm{arccot}\left(bx+a\right)+\log\left(\left(bx+a\right)^{2}+1\right)}{2\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/2*(2*(b*x + a)*arccot(b*x + a) + log((b*x + a)^2 + 1))/b
```

mupad [B] time = 1.20, size = 42, normalized size = 1.27

$$\frac{\frac{\ln\left(a^2+2\,a\,b\,x+b^2\,x^2+1\right)}{2}+a\,\mathrm{acot}\left(a+b\,x\right)}{b}+x\,\mathrm{acot}\left(a+b\,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(acot(a + b*x),x)
```

```
[Out] (log(a^2 + b^2*x^2 + 2*a*b*x + 1)/2 + a*acot(a + b*x))/b + x*acot(a + b*x)
```

sympy [A]   time = 0.38, size = 46, normalized size = 1.39

$$\begin{cases} \frac{a \operatorname{acot}(a+bx)}{b} + x \operatorname{acot}(a+bx) + \frac{\log\left(a^2+2abx+b^2x^2+1\right)}{2b} & \text{for } b \neq 0 \\ x \operatorname{acot}(a) & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(acot(b*x+a),x)
```

```
[Out] Piecewise((a*acot(a + b*x)/b + x*acot(a + b*x) + log(a**2 + 2*a*b*x + b**2*
x**2 + 1)/(2*b), Ne(b, 0)), (x*acot(a), True))
```

3.103 $\int \frac{\cot^{-1}(a+bx)}{x} \, dx$

Optimal. Leaf size=120

$$-\frac{1}{2}i\text{Li}_2\left(1-\frac{2}{1-i(a+bx)}\right)+\frac{1}{2}i\text{Li}_2\left(1-\frac{2bx}{(i-a)(1-i(a+bx))}\right)+\log\left(\frac{2}{1-i(a+bx)}\right)\left(-\cot^{-1}(a+bx)\right)+\log\left(\frac{}{(-a}\right.$$

```
[Out] -arccot(b*x+a)*ln(2/(1-I*(b*x+a)))+arccot(b*x+a)*ln(2*b*x/(I-a)/(1-I*(b*x+a
)))-1/2*I*polylog(2,1-2/(1-I*(b*x+a)))+1/2*I*polylog(2,1-2*b*x/(I-a)/(1-I*(
b*x+a)))
```

Rubi [A] time = 0.11, antiderivative size = 120, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.500, Rules used = {5048, 4857, 2402, 2315, 2447}

$$-\frac{1}{2}i\text{PolyLog}\left(2,1-\frac{2}{1-i(a+bx)}\right)+\frac{1}{2}i\text{PolyLog}\left(2,1-\frac{2bx}{(-a+i)(1-i(a+bx))}\right)+\log\left(\frac{2}{1-i(a+bx)}\right)\left(-\cot^{-1}(a\right.$$

Antiderivative was successfully verified.

```
[In] Int[ArcCot[a + b*x]/x,x]
```

```
[Out] -(ArcCot[a + b*x]*Log[2/(1 - I*(a + b*x))]) + ArcCot[a + b*x]*Log[(2*b*x)/(
(I - a)*(1 - I*(a + b*x)))] - (I/2)*PolyLog[2, 1 - 2/(1 - I*(a + b*x))] + (
I/2)*PolyLog[2, 1 - (2*b*x)/((I - a)*(1 - I*(a + b*x)))]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2402

```
Int[Log[(c_.)/((d_) + (e_.)*(x_))]/((f_) + (g_.)*(x_)^2), x_Symbol] :> -Dis
t[e/g, Subst[Int[Log[2*d*x]/(1 - 2*d*x), x], x, 1/(d + e*x)], x] /; FreeQ[{
c, d, e, f, g}, x] && EqQ[c, 2*d] && EqQ[e^2*f + d^2*g, 0]
```

Rule 2447

```
Int[Log[u_]*(Pq_)^(m_.), x_Symbol] :> With[{C = FullSimplify[(Pq^m*(1 - u))
/D[u, x]]}, Simp[C*PolyLog[2, 1 - u], x] /; FreeQ[C, x]] /; IntegerQ[m] &&
PolyQ[Pq, x] && RationalFunctionQ[u, x] && LeQ[RationalFunctionExponents[u,
 x][[2]], Expon[Pq, x]]
```

Rule 4857

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))/((d_) + (e_.)*(x_)), x_Symbol] :> -S
imp[((a + b*ArcCot[c*x])*Log[2/(1 - I*c*x)])/e, x] + (-Dist[(b*c)/e, Int[Lo
g[2/(1 - I*c*x)]/(1 + c^2*x^2), x], x] + Dist[(b*c)/e, Int[Log[(2*c*(d + e*
x))/((c*d + I*e)*(1 - I*c*x))]/(1 + c^2*x^2), x], x] + Simp[((a + b*ArcCot[
c*x])*Log[(2*c*(d + e*x))/((c*d + I*e)*(1 - I*c*x))])/e, x]) /; FreeQ[{a, b
, c, d, e}, x] && NeQ[c^2*d^2 + e^2, 0]
```

Rule 5048

```
Int[((a_.) + ArcCot[(c_) + (d_.)*(x_)]*(b_.))^(p_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[(((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cCot[x])^p, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, p}, x] && IG
tQ[p, 0]
```

Rubi steps

$$\int \frac{\cot^{-1}(a+bx)}{x}\,dx = \frac{\text{Subst}\left(\int \frac{\cot^{-1}(x)}{-\frac{a}{b}+\frac{x}{b}}\,dx, x, a+bx\right)}{b}$$

$$= -\cot^{-1}(a+bx)\log\left(\frac{2}{1-i(a+bx)}\right) + \cot^{-1}(a+bx)\log\left(\frac{2bx}{(i-a)(1-i(a+bx))}\right) - \text{Subst}\Bigg(\int$$

$$= -\cot^{-1}(a+bx)\log\left(\frac{2}{1-i(a+bx)}\right) + \cot^{-1}(a+bx)\log\left(\frac{2bx}{(i-a)(1-i(a+bx))}\right) + \frac{1}{2}i\text{Li}_2\Big(1$$

$$= -\cot^{-1}(a+bx)\log\left(\frac{2}{1-i(a+bx)}\right) + \cot^{-1}(a+bx)\log\left(\frac{2bx}{(i-a)(1-i(a+bx))}\right) - \frac{1}{2}i\text{Li}_2\Big(1$$

Mathematica [B] time = 0.03, size = 251, normalized size = 2.09

$$-\frac{1}{2}i\text{Li}_2\left(-\frac{b\left(\frac{a+bx}{b}-\frac{a}{b}\right)}{a-i}\right)+\frac{1}{2}i\text{Li}_2\left(-\frac{b\left(\frac{a+bx}{b}-\frac{a}{b}\right)}{a+i}\right)-\frac{1}{2}i\log\left(\frac{a+bx-i}{b\left(\frac{a}{b}-\frac{i}{b}\right)}\right)\log\left(\frac{a+bx}{b}-\frac{a}{b}\right)+\frac{1}{2}i\log\left(\frac{a+bx-i}{a+bx}\right)\log\Big($$

Warning: Unable to verify antiderivative.

```
[In] Integrate[ArcCot[a + b*x]/x,x]
```

```
[Out] (-1/2*I)*Log[(-I + a + b*x)/(((-I)/b + a/b)*b)]*Log[-(a/b) + (a + b*x)/b] +
 (I/2)*Log[(-I + a + b*x)/(a + b*x)]*Log[-(a/b) + (a + b*x)/b] + (I/2)*Log[
(I + a + b*x)/((I/b + a/b)*b)]*Log[-(a/b) + (a + b*x)/b] - (I/2)*Log[(I + a
 + b*x)/(a + b*x)]*Log[-(a/b) + (a + b*x)/b] - (I/2)*PolyLog[2, -((b*(-(a/b
) + (a + b*x)/b))/(-I + a))] + (I/2)*PolyLog[2, -((b*(-(a/b) + (a + b*x)/b)
)/(I + a))]
```

fricas [F] time = 0.53, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\text{arccot}(bx+a)}{x}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integral(arccot(b*x + a)/x, x)
```

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

$$\int \frac{\text{arccot}(bx+a)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate(arccot(b*x + a)/x, x)
```

maple [A] time = 0.06, size = 103, normalized size = 0.86

$$\ln(bx)\,\text{arccot}(bx+a)-\frac{i\ln(bx)\ln\left(\frac{-bx-a+i}{i-a}\right)}{2}+\frac{i\ln(bx)\ln\left(\frac{bx+a+i}{i+a}\right)}{2}-\frac{i\,\text{dilog}\left(\frac{-bx-a+i}{i-a}\right)}{2}+\frac{i\,\text{dilog}\left(\frac{bx+a+i}{i+a}\right)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arccot(b*x+a)/x,x)
```

```
[Out] ln(b*x)*arccot(b*x+a)-1/2*I*ln(b*x)*ln((I-a-b*x)/(I-a))+1/2*I*ln(b*x)*ln((I
+a+b*x)/(I+a))-1/2*I*dilog((I-a-b*x)/(I-a))+1/2*I*dilog((I+a+b*x)/(I+a))
```

maxima [A] time = 0.48, size = 133, normalized size = 1.11

$$\frac{1}{2}\arctan\left(\frac{bx}{a^2+1}, -\frac{abx}{a^2+1}\right)\log\left(b^2x^2+2\,abx+a^2+1\right)-\frac{1}{2}\arctan\left(bx+a\right)\log\left(\frac{b^2x^2}{a^2+1}\right)+\operatorname{arccot}\left(bx+a\right)\log($$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/2*arctan2(b*x/(a^2 + 1), -a*b*x/(a^2 + 1))*log(b^2*x^2 + 2*a*b*x + a^2 +
1) - 1/2*arctan(b*x + a)*log(b^2*x^2/(a^2 + 1)) + arccot(b*x + a)*log(x) +
arctan((b^2*x + a*b)/b)*log(x) + 1/2*I*dilog((I*b*x + I*a + 1)/(I*a + 1)) -
 1/2*I*dilog((I*b*x + I*a - 1)/(I*a - 1))
```

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

$$\int \frac{\operatorname{acot}\left(a+b\,x\right)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(acot(a + b*x)/x,x)
```

```
[Out] int(acot(a + b*x)/x, x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(acot(b*x+a)/x,x)
```

```
[Out] Timed out
```

3.104 $\int \frac{\cot^{-1}(a+bx)}{x^2}\,dx$

Optimal. Leaf size=62

$$-\frac{b\log(x)}{a^2+1}+\frac{b\log\left((a+bx)^2+1\right)}{2\left(a^2+1\right)}+\frac{ab\tan^{-1}(a+bx)}{a^2+1}-\frac{\cot^{-1}(a+bx)}{x}$$

```
[Out] -arccot(b*x+a)/x+a*b*arctan(b*x+a)/(a^2+1)-b*ln(x)/(a^2+1)+1/2*b*ln(1+(b*x+
a)^2)/(a^2+1)
```

Rubi [A] time = 0.04, antiderivative size = 62, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 7, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.700, Rules used = {5046, 371, 706, 31, 635, 203, 260}

$$-\frac{b\log(x)}{a^2+1}+\frac{b\log\left((a+bx)^2+1\right)}{2\left(a^2+1\right)}+\frac{ab\tan^{-1}(a+bx)}{a^2+1}-\frac{\cot^{-1}(a+bx)}{x}$$

Antiderivative was successfully verified.

```
[In] Int[ArcCot[a + b*x]/x^2,x]
```

```
[Out] -(ArcCot[a + b*x]/x) + (a*b*ArcTan[a + b*x])/(1 + a^2) - (b*Log[x])/(1 + a^
2) + (b*Log[1 + (a + b*x)^2])/(2*(1 + a^2))
```

Rule 31

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

Rule 203

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

Rule 260

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

Rule 371

```
Int[((a_) + (b_.)*(v_)^(n_))^(p_.)*(x_)^(m_.), x_Symbol] :> With[{c = Coeff
icient[v, x, 0], d = Coefficient[v, x, 1]}, Dist[1/d^(m + 1), Subst[Int[Sim
plifyIntegrand[(x - c)^m*(a + b*x^n)^p, x], x], x, v], x] /; NeQ[c, 0]] /;
FreeQ[{a, b, n, p}, x] && LinearQ[v, x] && IntegerQ[m]
```

Rule 635

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> Dist[d, Int[1/(
a + c*x^2), x], x] + Dist[e, Int[x/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e
}, x] &&  !NiceSqrtQ[-(a*c)]
```

Rule 706

```
Int[1/(((d_) + (e_.)*(x_))*((a_) + (c_.)*(x_)^2)), x_Symbol] :> Dist[e^2/(c
*d^2 + a*e^2), Int[1/(d + e*x), x], x] + Dist[1/(c*d^2 + a*e^2), Int[(c*d -
 c*e*x)/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e}, x] && NeQ[c*d^2 + a*e^2,
```

```
0]
```

Rule 5046

```
Int[((a_.) + ArcCot[(c_) + (d_.)*(x_)]*(b_.))^(p_.)*((e_.) + (f_.)*(x_))^(m
_), x_Symbol] :> Simp[((e + f*x)^(m + 1)*(a + b*ArcCot[c + d*x])^p)/(f*(m +
 1)), x] + Dist[(b*d*p)/(f*(m + 1)), Int[((e + f*x)^(m + 1)*(a + b*ArcCot[c
 + d*x])^(p - 1))/(1 + (c + d*x)^2), x], x] /; FreeQ[{a, b, c, d, e, f}, x]
 && IGtQ[p, 0] && ILtQ[m, -1]
```

Rubi steps

$$\begin{aligned}
\int \frac{\cot^{-1}(a+bx)}{x^2}\,dx &= -\frac{\cot^{-1}(a+bx)}{x} - b\int \frac{1}{x\left(1+(a+bx)^2\right)}\,dx\\
&= -\frac{\cot^{-1}(a+bx)}{x} - b\,\text{Subst}\left(\int \frac{1}{(-a+x)\left(1+x^2\right)}\,dx, x, a+bx\right)\\
&= -\frac{\cot^{-1}(a+bx)}{x} - \frac{b\,\text{Subst}\left(\int \frac{1}{-a+x}\,dx, x, a+bx\right)}{1+a^2} - \frac{b\,\text{Subst}\left(\int \frac{-a-x}{1+x^2}\,dx, x, a+bx\right)}{1+a^2}\\
&= -\frac{\cot^{-1}(a+bx)}{x} - \frac{b\log(x)}{1+a^2} + \frac{b\,\text{Subst}\left(\int \frac{x}{1+x^2}\,dx, x, a+bx\right)}{1+a^2} + \frac{(ab)\,\text{Subst}\left(\int \frac{1}{1+x^2}\,dx, x, a\right.}{1+a^2}\\
&= -\frac{\cot^{-1}(a+bx)}{x} + \frac{ab\tan^{-1}(a+bx)}{1+a^2} - \frac{b\log(x)}{1+a^2} + \frac{b\log\left(1+(a+bx)^2\right)}{2\left(1+a^2\right)}
\end{aligned}$$

Mathematica [C] time = 0.07, size = 66, normalized size = 1.06

$$-\frac{\cot^{-1}(a+bx)}{x} + \frac{b((1-ia)\log(-a-bx+i)+(1+ia)\log(a+bx+i)-2\log(x))}{2\left(a^2+1\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcCot[a + b*x]/x^2,x]
```

```
[Out] -(ArcCot[a + b*x]/x) + (b*(-2*Log[x] + (1 - I*a)*Log[I - a - b*x] + (1 + I*
a)*Log[I + a + b*x]))/(2*(1 + a^2))
```

fricas [A] time = 0.52, size = 64, normalized size = 1.03

$$\frac{2\,abx\arctan(bx+a) + bx\log\left(b^2x^2+2\,abx+a^2+1\right) - 2\,bx\log(x) - 2\left(a^2+1\right)\text{arccot}(bx+a)}{2\left(a^2+1\right)x}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/2*(2*a*b*x*arctan(b*x + a) + b*x*log(b^2*x^2 + 2*a*b*x + a^2 + 1) - 2*b*x
*log(x) - 2*(a^2 + 1)*arccot(b*x + a))/((a^2 + 1)*x)
```

giac [B] time = 0.37, size = 498, normalized size = 8.03

$$-\frac{\left(2\,a\arctan\left(\frac{1}{bx+a}\right)\tan\left(\frac{1}{2}\arctan\left(\frac{1}{bx+a}\right)\right)^2 + 2\,a\log\left(\frac{4\left(4\,a^2\tan\left(\frac{1}{2}\arctan\left(\frac{1}{bx+a}\right)\right)^2+4\,a\tan\left(\frac{1}{2}\arctan\left(\frac{1}{bx+a}\right)\right)^3+\tan\left(\frac{1}{2}\arctan\left(\right.\right.\right.}{\tan\left(\frac{1}{2}\arctan\left(\frac{1}{bx+a}\right)\right)^4+2\tan\left(\right.}\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/2*(2*a*arctan(1/(b*x + a))*tan(1/2*arctan(1/(b*x + a)))^2 + 2*a*log(4*(4
*a^2*tan(1/2*arctan(1/(b*x + a)))^2 + 4*a*tan(1/2*arctan(1/(b*x + a)))^3 +
tan(1/2*arctan(1/(b*x + a)))^4 - 4*a*tan(1/2*arctan(1/(b*x + a))) - 2*tan(1
/2*arctan(1/(b*x + a)))^2 + 1)/(tan(1/2*arctan(1/(b*x + a)))^4 + 2*tan(1/2*
arctan(1/(b*x + a)))^2 + 1))*tan(1/2*arctan(1/(b*x + a))) + log(4*(4*a^2*ta
n(1/2*arctan(1/(b*x + a)))^2 + 4*a*tan(1/2*arctan(1/(b*x + a)))^3 + tan(1/2
*arctan(1/(b*x + a)))^4 - 4*a*tan(1/2*arctan(1/(b*x + a))) - 2*tan(1/2*arct
an(1/(b*x + a)))^2 + 1)/(tan(1/2*arctan(1/(b*x + a)))^4 + 2*tan(1/2*arctan(
1/(b*x + a)))^2 + 1))*tan(1/2*arctan(1/(b*x + a)))^2 - 2*a*arctan(1/(b*x +
a)) - 4*arctan(1/(b*x + a))*tan(1/2*arctan(1/(b*x + a))) - log(4*(4*a^2*tan
(1/2*arctan(1/(b*x + a)))^2 + 4*a*tan(1/2*arctan(1/(b*x + a)))^3 + tan(1/2*
arctan(1/(b*x + a)))^4 - 4*a*tan(1/2*arctan(1/(b*x + a))) - 2*tan(1/2*arcta
n(1/(b*x + a)))^2 + 1)/(tan(1/2*arctan(1/(b*x + a)))^4 + 2*tan(1/2*arctan(1
/(b*x + a)))^2 + 1)))*b/(2*a^3*tan(1/2*arctan(1/(b*x + a))) + a^2*tan(1/2*a
rctan(1/(b*x + a)))^2 - a^2 + 2*a*tan(1/2*arctan(1/(b*x + a))) + tan(1/2*ar
ctan(1/(b*x + a)))^2 - 1)
```

maple [A] time = 0.05, size = 63, normalized size = 1.02

$$-\frac{\operatorname{arccot}(bx+a)}{x}-\frac{b\ln(bx)}{a^2+1}+\frac{b\ln\left(1+(bx+a)^2\right)}{2a^2+2}+\frac{ab\arctan(bx+a)}{a^2+1}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -arccot(b*x+a)/x-b/(a^2+1)*ln(b*x)+1/2*b*ln(1+(b*x+a)^2)/(a^2+1)+a*b*arctan
(b*x+a)/(a^2+1)
```

maxima [A] time = 0.42, size = 77, normalized size = 1.24

$$\frac{1}{2}b\left(\frac{2a\arctan\left(\frac{b^2x+ab}{b}\right)}{a^2+1}+\frac{\log\left(b^2x^2+2abx+a^2+1\right)}{a^2+1}-\frac{2\log(x)}{a^2+1}\right)-\frac{\operatorname{arccot}(bx+a)}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/2*b*(2*a*arctan((b^2*x + a*b)/b)/(a^2 + 1) + log(b^2*x^2 + 2*a*b*x + a^2
+ 1)/(a^2 + 1) - 2*log(x)/(a^2 + 1)) - arccot(b*x + a)/x
```

mupad [B] time = 1.22, size = 62, normalized size = 1.00

$$-\frac{\operatorname{acot}(a+b\,x)}{x}-\frac{b\,x\,\ln(x)-\frac{b\,x\,\ln\left(a^2+2\,a\,b\,x+b^2\,x^2+1\right)}{2}+a\,b\,x\,\operatorname{acot}(a+b\,x)}{x\,\left(a^2+1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] - acot(a + b*x)/x - (b*x*log(x) - (b*x*log(a^2 + b^2*x^2 + 2*a*b*x + 1))/2
+ a*b*x*acot(a + b*x))/(x*(a^2 + 1))
```

sympy [B] time = 1.77, size = 167, normalized size = 2.69

$$\begin{cases} -\frac{ib\operatorname{acot}(bx-i)}{2} - \frac{\operatorname{acot}(bx-i)}{x} + \frac{i}{2x} & \text{for } a = -i \\ \frac{ib\operatorname{acot}(bx+i)}{2} - \frac{\operatorname{acot}(bx+i)}{x} - \frac{i}{2x} & \text{for } a = i \\ -\frac{2a^2\operatorname{acot}(a+bx)}{2a^2x+2x} - \frac{2abx\operatorname{acot}(a+bx)}{2a^2x+2x} - \frac{2bx\log(x)}{2a^2x+2x} + \frac{bx\log\left(a^2+2abx+b^2x^2+1\right)}{2a^2x+2x} - \frac{2\operatorname{acot}(a+bx)}{2a^2x+2x} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(acot(b*x+a)/x**2,x)
```

```
[Out] Piecewise((-I*b*acot(b*x - I)/2 - acot(b*x - I)/x + I/(2*x), Eq(a, -I)), (I
*b*acot(b*x + I)/2 - acot(b*x + I)/x - I/(2*x), Eq(a, I)), (-2*a**2*acot(a
+ b*x)/(2*a**2*x + 2*x) - 2*a*b*x*acot(a + b*x)/(2*a**2*x + 2*x) - 2*b*x*lo
g(x)/(2*a**2*x + 2*x) + b*x*log(a**2 + 2*a*b*x + b**2*x**2 + 1)/(2*a**2*x +
 2*x) - 2*acot(a + b*x)/(2*a**2*x + 2*x), True))
```

3.105 $\int \frac{\cot^{-1}(a+bx)}{x^3}\,dx$

Optimal. Leaf size=95

$$\frac{ab^2\log(x)}{\left(a^2+1\right)^2}-\frac{ab^2\log\left((a+bx)^2+1\right)}{2\left(a^2+1\right)^2}+\frac{\left(1-a^2\right)b^2\tan^{-1}(a+bx)}{2\left(a^2+1\right)^2}+\frac{b}{2\left(a^2+1\right)x}-\frac{\cot^{-1}(a+bx)}{2x^2}$$

```
[Out] 1/2*b/(a^2+1)/x-1/2*arccot(b*x+a)/x^2+1/2*(-a^2+1)*b^2*arctan(b*x+a)/(a^2+1
)^2+a*b^2*ln(x)/(a^2+1)^2-1/2*a*b^2*ln(1+(b*x+a)^2)/(a^2+1)^2
```

Rubi [A] time = 0.08, antiderivative size = 95, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 7, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.700, Rules used = {5046, 371, 710, 801, 635, 203, 260}

$$\frac{ab^2\log(x)}{\left(a^2+1\right)^2}-\frac{ab^2\log\left((a+bx)^2+1\right)}{2\left(a^2+1\right)^2}+\frac{\left(1-a^2\right)b^2\tan^{-1}(a+bx)}{2\left(a^2+1\right)^2}+\frac{b}{2\left(a^2+1\right)x}-\frac{\cot^{-1}(a+bx)}{2x^2}$$

Antiderivative was successfully verified.

```
[In] Int[ArcCot[a + b*x]/x^3,x]
```

```
[Out] b/(2*(1 + a^2)*x) - ArcCot[a + b*x]/(2*x^2) + ((1 - a^2)*b^2*ArcTan[a + b*x
])/(2*(1 + a^2)^2) + (a*b^2*Log[x])/(1 + a^2)^2 - (a*b^2*Log[1 + (a + b*x)^
2])/(2*(1 + a^2)^2)
```

Rule 203

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

Rule 260

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

Rule 371

```
Int[((a_) + (b_.)*(v_)^(n_))^(p_.)*(x_)^(m_.), x_Symbol] :> With[{c = Coeff
icient[v, x, 0], d = Coefficient[v, x, 1]}, Dist[1/d^(m + 1), Subst[Int[Sim
plifyIntegrand[(x - c)^m*(a + b*x^n)^p, x], x], x, v], x] /; NeQ[c, 0]] /;
FreeQ[{a, b, n, p}, x] && LinearQ[v, x] && IntegerQ[m]
```

Rule 635

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> Dist[d, Int[1/(
a + c*x^2), x], x] + Dist[e, Int[x/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e
}, x] && !NiceSqrtQ[-(a*c)]
```

Rule 710

```
Int[((d_) + (e_.)*(x_))^(m_)/((a_) + (c_.)*(x_)^2), x_Symbol] :> Simp[(e*(d
 + e*x)^(m + 1))/((m + 1)*(c*d^2 + a*e^2)), x] + Dist[c/(c*d^2 + a*e^2), In
t[((d + e*x)^(m + 1)*(d - e*x))/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e, m
}, x] && NeQ[c*d^2 + a*e^2, 0] && LtQ[m, -1]
```

Rule 801

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a + c*x^2), x],
x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && IntegerQ[m]
```

Rule 5046

```
Int[((a_.) + ArcCot[(c_) + (d_.)*(x_)]*(b_.))^(p_.)*((e_.) + (f_.)*(x_))^(m
_), x_Symbol] :> Simp[((e + f*x)^(m + 1)*(a + b*ArcCot[c + d*x])^p)/(f*(m +
 1)), x] + Dist[(b*d*p)/(f*(m + 1)), Int[((e + f*x)^(m + 1)*(a + b*ArcCot[c
 + d*x])^(p - 1))/(1 + (c + d*x)^2), x], x] /; FreeQ[{a, b, c, d, e, f}, x]
 && IGtQ[p, 0] && ILtQ[m, -1]
```

Rubi steps

$$\int \frac{\cot^{-1}(a+bx)}{x^3}\,dx = -\frac{\cot^{-1}(a+bx)}{2x^2} - \frac{1}{2}b\int \frac{1}{x^2\left(1+(a+bx)^2\right)}\,dx$$

$$= -\frac{\cot^{-1}(a+bx)}{2x^2} - \frac{1}{2}b^2\,\text{Subst}\left(\int \frac{1}{(-a+x)^2\left(1+x^2\right)}\,dx, x, a+bx\right)$$

$$= \frac{b}{2\left(1+a^2\right)x} - \frac{\cot^{-1}(a+bx)}{2x^2} - \frac{b^2\,\text{Subst}\left(\int \frac{-a-x}{(-a+x)\left(1+x^2\right)}\,dx, x, a+bx\right)}{2\left(1+a^2\right)}$$

$$= \frac{b}{2\left(1+a^2\right)x} - \frac{\cot^{-1}(a+bx)}{2x^2} - \frac{b^2\,\text{Subst}\left(\int \left(\frac{2a}{\left(1+a^2\right)(a-x)} + \frac{-1+a^2+2ax}{\left(1+a^2\right)\left(1+x^2\right)}\right)dx, x, a+bx\right)}{2\left(1+a^2\right)}$$

$$= \frac{b}{2\left(1+a^2\right)x} - \frac{\cot^{-1}(a+bx)}{2x^2} + \frac{ab^2\log(x)}{\left(1+a^2\right)^2} - \frac{b^2\,\text{Subst}\left(\int \frac{-1+a^2+2ax}{1+x^2}\,dx, x, a+bx\right)}{2\left(1+a^2\right)^2}$$

$$= \frac{b}{2\left(1+a^2\right)x} - \frac{\cot^{-1}(a+bx)}{2x^2} + \frac{ab^2\log(x)}{\left(1+a^2\right)^2} - \frac{\left(ab^2\right)\text{Subst}\left(\int \frac{x}{1+x^2}\,dx, x, a+bx\right)}{\left(1+a^2\right)^2} + \frac{\left(\left(1-\right.\right.}{}$$

$$= \frac{b}{2\left(1+a^2\right)x} - \frac{\cot^{-1}(a+bx)}{2x^2} + \frac{\left(1-a^2\right)b^2\tan^{-1}(a+bx)}{2\left(1+a^2\right)^2} + \frac{ab^2\log(x)}{\left(1+a^2\right)^2} - \frac{ab^2\log\left(1+(a\right.}{2\left(1+a^2\right.}$$

Mathematica [C] time = 0.11, size = 92, normalized size = 0.97

$$\frac{-2\cot^{-1}(a+bx) + \frac{bx\left(i(a+i)^2bx\log(-a-bx+i)+4abx\log(x)+(a-i)((-1-ia)bx\log(a+bx+i)+2(a+i))\right)}{\left(a^2+1\right)^2}}{4x^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcCot[a + b*x]/x^3,x]
```

```
[Out] (-2*ArcCot[a + b*x] + (b*x*(4*a*b*x*Log[x] + I*(I + a)^2*b*x*Log[I - a - b*
x] + (-I + a)*(2*(I + a) + (-1 - I*a)*b*x*Log[I + a + b*x])))/(1 + a^2)^2)/
(4*x^2)
```

fricas [A] time = 0.74, size = 99, normalized size = 1.04

$$-\frac{\left(a^2-1\right)b^2x^2\arctan(bx+a) + ab^2x^2\log\left(b^2x^2+2\,abx+a^2+1\right) - 2\,ab^2x^2\log(x) - \left(a^2+1\right)bx + \left(a^4+2\,a^2+\right.}{2\left(a^4+2\,a^2+1\right)x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/2*((a^2 - 1)*b^2*x^2*arctan(b*x + a) + a*b^2*x^2*log(b^2*x^2 + 2*a*b*x +
 a^2 + 1) - 2*a*b^2*x^2*log(x) - (a^2 + 1)*b*x + (a^4 + 2*a^2 + 1)*arccot(b
*x + a))/((a^4 + 2*a^2 + 1)*x^2)
```

giac [B] time = 0.71, size = 1309, normalized size = 13.78

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/2*(4*a^3*b*arctan(1/(b*x + a))*tan(1/2*arctan(1/(b*x + a)))^3 + a^2*b*arc
tan(1/(b*x + a))*tan(1/2*arctan(1/(b*x + a)))^4 + 4*a^3*b*log(4*(4*a^2*tan(
1/2*arctan(1/(b*x + a)))^2 + 4*a*tan(1/2*arctan(1/(b*x + a)))^3 + tan(1/2*a
rctan(1/(b*x + a)))^4 - 4*a*tan(1/2*arctan(1/(b*x + a))) - 2*tan(1/2*arctan
(1/(b*x + a)))^2 + 1)/(tan(1/2*arctan(1/(b*x + a)))^4 + 2*tan(1/2*arctan(1/
(b*x + a)))^2 + 1))*tan(1/2*arctan(1/(b*x + a)))^2 + 4*a^2*b*log(4*(4*a^2*t
an(1/2*arctan(1/(b*x + a)))^2 + 4*a*tan(1/2*arctan(1/(b*x + a)))^3 + tan(1/
2*arctan(1/(b*x + a)))^4 - 4*a*tan(1/2*arctan(1/(b*x + a))) - 2*tan(1/2*arc
tan(1/(b*x + a)))^2 + 1)/(tan(1/2*arctan(1/(b*x + a)))^4 + 2*tan(1/2*arctan
(1/(b*x + a)))^2 + 1))*tan(1/2*arctan(1/(b*x + a)))^3 + a*b*log(4*(4*a^2*ta
n(1/2*arctan(1/(b*x + a)))^2 + 4*a*tan(1/2*arctan(1/(b*x + a)))^3 + tan(1/2
*arctan(1/(b*x + a)))^4 - 4*a*tan(1/2*arctan(1/(b*x + a))) - 2*tan(1/2*arct
an(1/(b*x + a)))^2 + 1)/(tan(1/2*arctan(1/(b*x + a)))^4 + 2*tan(1/2*arctan(
1/(b*x + a)))^2 + 1))*tan(1/2*arctan(1/(b*x + a)))^4 - 4*a^3*b*arctan(1/(b*
x + a))*tan(1/2*arctan(1/(b*x + a))) - 14*a^2*b*arctan(1/(b*x + a))*tan(1/2
*arctan(1/(b*x + a)))^2 + 2*a^2*b*tan(1/2*arctan(1/(b*x + a)))^3 - 4*a*b*ar
ctan(1/(b*x + a))*tan(1/2*arctan(1/(b*x + a)))^3 + a*b*tan(1/2*arctan(1/(b*
x + a)))^4 - b*arctan(1/(b*x + a))*tan(1/2*arctan(1/(b*x + a)))^4 - 4*a^2*b
*log(4*(4*a^2*tan(1/2*arctan(1/(b*x + a)))^2 + 4*a*tan(1/2*arctan(1/(b*x +
a)))^3 + tan(1/2*arctan(1/(b*x + a)))^4 - 4*a*tan(1/2*arctan(1/(b*x + a)))
- 2*tan(1/2*arctan(1/(b*x + a)))^2 + 1)/(tan(1/2*arctan(1/(b*x + a)))^4 + 2
*tan(1/2*arctan(1/(b*x + a)))^2 + 1))*tan(1/2*arctan(1/(b*x + a))) - 2*a*b*
log(4*(4*a^2*tan(1/2*arctan(1/(b*x + a)))^2 + 4*a*tan(1/2*arctan(1/(b*x + a
)))^3 + tan(1/2*arctan(1/(b*x + a)))^4 - 4*a*tan(1/2*arctan(1/(b*x + a))) -
 2*tan(1/2*arctan(1/(b*x + a)))^2 + 1)/(tan(1/2*arctan(1/(b*x + a)))^4 + 2*
tan(1/2*arctan(1/(b*x + a)))^2 + 1))*tan(1/2*arctan(1/(b*x + a)))^2 + a^2*b
*arctan(1/(b*x + a)) - 2*a^2*b*tan(1/2*arctan(1/(b*x + a))) + 4*a*b*arctan(
1/(b*x + a))*tan(1/2*arctan(1/(b*x + a))) - 6*a*b*tan(1/2*arctan(1/(b*x + a
)))^2 - 2*b*arctan(1/(b*x + a))*tan(1/2*arctan(1/(b*x + a)))^2 - 2*b*tan(1/
2*arctan(1/(b*x + a)))^3 + a*b*log(4*(4*a^2*tan(1/2*arctan(1/(b*x + a)))^2
+ 4*a*tan(1/2*arctan(1/(b*x + a)))^3 + tan(1/2*arctan(1/(b*x + a)))^4 - 4*a
*tan(1/2*arctan(1/(b*x + a))) - 2*tan(1/2*arctan(1/(b*x + a)))^2 + 1)/(tan(
1/2*arctan(1/(b*x + a)))^4 + 2*tan(1/2*arctan(1/(b*x + a)))^2 + 1)) + a*b -
 b*arctan(1/(b*x + a)) + 2*b*tan(1/2*arctan(1/(b*x + a))))*b/(4*a^6*tan(1/2
*arctan(1/(b*x + a)))^2 + 4*a^5*tan(1/2*arctan(1/(b*x + a)))^3 + a^4*tan(1/
2*arctan(1/(b*x + a)))^4 - 4*a^5*tan(1/2*arctan(1/(b*x + a))) + 6*a^4*tan(1
/2*arctan(1/(b*x + a)))^2 + 8*a^3*tan(1/2*arctan(1/(b*x + a)))^3 + 2*a^2*ta
n(1/2*arctan(1/(b*x + a)))^4 + a^4 - 8*a^3*tan(1/2*arctan(1/(b*x + a))) + 4
*a*tan(1/2*arctan(1/(b*x + a)))^3 + tan(1/2*arctan(1/(b*x + a)))^4 + 2*a^2
- 4*a*tan(1/2*arctan(1/(b*x + a))) - 2*tan(1/2*arctan(1/(b*x + a)))^2 + 1)
```

maple [A] time = 0.05, size = 104, normalized size = 1.09

$$-\frac{\operatorname{arccot}(bx+a)}{2x^2}+\frac{b}{2\left(a^2+1\right)x}+\frac{b^2 a\ln(bx)}{\left(a^2+1\right)^2}-\frac{b^2\arctan(bx+a)\,a^2}{2\left(a^2+1\right)^2}-\frac{a\,b^2\ln\left(1+(bx+a)^2\right)}{2\left(a^2+1\right)^2}+\frac{b^2\arctan(bx+a)}{2\left(a^2+1\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/2*arccot(b*x+a)/x^2+1/2*b/(a^2+1)/x+b^2/(a^2+1)^2*a*ln(b*x)-1/2*b^2/(a^2
+1)^2*arctan(b*x+a)*a^2-1/2*a*b^2*ln(1+(b*x+a)^2)/(a^2+1)^2+1/2*b^2/(a^2+1)
^2*arctan(b*x+a)
```

maxima [A] time = 0.42, size = 112, normalized size = 1.18

$$-\frac{1}{2}\left(\frac{\left(a^2-1\right)b\arctan\left(\frac{b^2x+ab}{b}\right)}{a^4+2a^2+1}+\frac{ab\log\left(b^2x^2+2abx+a^2+1\right)}{a^4+2a^2+1}-\frac{2ab\log(x)}{a^4+2a^2+1}-\frac{1}{\left(a^2+1\right)x}\right)b-\frac{\operatorname{arccot}(bx+a}{2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/2*((a^2 - 1)*b*arctan((b^2*x + a*b)/b)/(a^4 + 2*a^2 + 1) + a*b*log(b^2*x
^2 + 2*a*b*x + a^2 + 1)/(a^4 + 2*a^2 + 1) - 2*a*b*log(x)/(a^4 + 2*a^2 + 1)
- 1/((a^2 + 1)*x))*b - 1/2*arccot(b*x + a)/x^2
```

mupad [B] time = 1.39, size = 230, normalized size = 2.42

$$\frac{\operatorname{atan}\left(\frac{2xb^2+2ab}{2\sqrt{b^2\left(a^2+1\right)-a^2b^2}}\right)\left(b^3-a^2b^3\right)}{\sqrt{b^2}\left(2a^4+4a^2+2\right)}-\frac{ab^2\ln\left(a^2+2abx+b^2x^2+1\right)}{2\left(a^2+1\right)^2}-\frac{\operatorname{acot}(a+bx)\left(\frac{a^2}{2}+\frac{1}{2}\right)-\frac{bx}{2}+\frac{b^2x^2\operatorname{acot}}{2}}{a^2x^2+}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] (atan((2*a*b + 2*b^2*x)/(2*(b^2*(a^2 + 1) - a^2*b^2)^(1/2)))*(b^3 - a^2*b^3
))/((b^2)^(1/2)*(4*a^2 + 2*a^4 + 2)) - (a*b^2*log(a^2 + b^2*x^2 + 2*a*b*x +
 1))/(2*(a^2 + 1)^2) - (acot(a + b*x)*(a^2/2 + 1/2) - (b*x)/2 + (b^2*x^2*ac
ot(a + b*x))/2 - (x^3*(b^3 - 3*a^2*b^3))/(2*(2*a^2 + a^4 + 1)) + (a*b^4*x^4
)/(a^2 + 1)^2 + a*b*x*acot(a + b*x))/(x^2 + a^2*x^2 + b^2*x^4 + 2*a*b*x^3)
+ (a*b^2*log(x))/(a^2 + 1)^2
```

sympy [B] time = 2.83, size = 381, normalized size = 4.01

$$\begin{cases} -\frac{b^2\operatorname{acot}(bx-i)}{8}+\frac{b}{8x}-\frac{\operatorname{acot}(bx-i)}{2x^2}+\frac{i}{8x^2} \\ -\frac{b^2\operatorname{acot}(bx+i)}{8}+\frac{b}{8x}-\frac{\operatorname{acot}(bx+i)}{2x^2}-\frac{i}{8x^2} \\ -\frac{a^4\operatorname{acot}(a+bx)}{2a^4x^2+4a^2x^2+2x^2}+\frac{a^2b^2x^2\operatorname{acot}(a+bx)}{2a^4x^2+4a^2x^2+2x^2}+\frac{a^2bx}{2a^4x^2+4a^2x^2+2x^2}-\frac{2a^2\operatorname{acot}(a+bx)}{2a^4x^2+4a^2x^2+2x^2}+\frac{2ab^2x^2\log(x)}{2a^4x^2+4a^2x^2+2x^2}-\frac{ab^2x^2\log\left(a^2+2abx+b^2x^2+1\right)}{2a^4x^2+4a^2x^2+2x^2} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(acot(b*x+a)/x**3,x)
```

```
[Out] Piecewise((-b**2*acot(b*x - I)/8 + b/(8*x) - acot(b*x - I)/(2*x**2) + I/(8*
x**2), Eq(a, -I)), (-b**2*acot(b*x + I)/8 + b/(8*x) - acot(b*x + I)/(2*x**2
) - I/(8*x**2), Eq(a, I)), (-a**4*acot(a + b*x)/(2*a**4*x**2 + 4*a**2*x**2
+ 2*x**2) + a**2*b**2*x**2*acot(a + b*x)/(2*a**4*x**2 + 4*a**2*x**2 + 2*x**
2) + a**2*b*x/(2*a**4*x**2 + 4*a**2*x**2 + 2*x**2) - 2*a**2*acot(a + b*x)/(
2*a**4*x**2 + 4*a**2*x**2 + 2*x**2) + 2*a*b**2*x**2*log(x)/(2*a**4*x**2 + 4
*a**2*x**2 + 2*x**2) - a*b**2*x**2*log(a**2 + 2*a*b*x + b**2*x**2 + 1)/(2*a
**4*x**2 + 4*a**2*x**2 + 2*x**2) - b**2*x**2*acot(a + b*x)/(2*a**4*x**2 + 4
*a**2*x**2 + 2*x**2) + b*x/(2*a**4*x**2 + 4*a**2*x**2 + 2*x**2) - acot(a +
b*x)/(2*a**4*x**2 + 4*a**2*x**2 + 2*x**2), True))
```

3.106 $\int \frac{\cot^{-1}(a+bx)}{x^4} dx$

Optimal. Leaf size=129

$$\frac{(1-3a^2) b^3 \log(x)}{3(a^2+1)^3}-\frac{(1-3a^2) b^3 \log((a+bx)^2+1)}{6(a^2+1)^3}-\frac{a(3-a^2) b^3 \tan^{-1}(a+bx)}{3(a^2+1)^3}-\frac{2ab^2}{3(a^2+1)^2 x}+\frac{b}{6(a^2+1)x^2}-\frac{\text{co}}{}$$

```
[Out] 1/6*b/(a^2+1)/x^2-2/3*a*b^2/(a^2+1)^2/x-1/3*arccot(b*x+a)/x^3-1/3*a*(-a^2+3
)*b^3*arctan(b*x+a)/(a^2+1)^3+1/3*(-3*a^2+1)*b^3*ln(x)/(a^2+1)^3-1/6*(-3*a^
2+1)*b^3*ln(1+(b*x+a)^2)/(a^2+1)^3
```

Rubi [A] time = 0.11, antiderivative size = 129, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 7, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.700, Rules used = {5046, 371, 710, 801, 635, 203, 260}

$$-\frac{2ab^2}{3(a^2+1)^2 x}+\frac{(1-3a^2) b^3 \log(x)}{3(a^2+1)^3}-\frac{(1-3a^2) b^3 \log((a+bx)^2+1)}{6(a^2+1)^3}-\frac{a(3-a^2) b^3 \tan^{-1}(a+bx)}{3(a^2+1)^3}+\frac{b}{6(a^2+1)x^2}-$$

Antiderivative was successfully verified.

```
[In] Int[ArcCot[a + b*x]/x^4,x]
```

```
[Out] b/(6*(1 + a^2)*x^2) - (2*a*b^2)/(3*(1 + a^2)^2*x) - ArcCot[a + b*x]/(3*x^3)
 - (a*(3 - a^2)*b^3*ArcTan[a + b*x])/(3*(1 + a^2)^3) + ((1 - 3*a^2)*b^3*Log
[x])/(3*(1 + a^2)^3) - ((1 - 3*a^2)*b^3*Log[1 + (a + b*x)^2])/(6*(1 + a^2)^
3)
```

Rule 203

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

Rule 260

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

Rule 371

```
Int[((a_) + (b_.)*(v_)^(n_))^(p_.)*(x_)^(m_.), x_Symbol] :> With[{c = Coeff
icient[v, x, 0], d = Coefficient[v, x, 1]}, Dist[1/d^(m + 1), Subst[Int[Sim
plifyIntegrand[(x - c)^m*(a + b*x^n)^p, x], x], x, v], x] /; NeQ[c, 0]] /;
FreeQ[{a, b, n, p}, x] && LinearQ[v, x] && IntegerQ[m]
```

Rule 635

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> Dist[d, Int[1/(
a + c*x^2), x], x] + Dist[e, Int[x/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e
}, x] &&  !NiceSqrtQ[-(a*c)]
```

Rule 710

```
Int[((d_) + (e_.)*(x_))^(m_)/((a_) + (c_.)*(x_)^2), x_Symbol] :> Simp[(e*(d
 + e*x)^(m + 1))/((m + 1)*(c*d^2 + a*e^2)), x] + Dist[c/(c*d^2 + a*e^2), In
t[((d + e*x)^(m + 1)*(d - e*x))/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e, m
}, x] && NeQ[c*d^2 + a*e^2, 0] && LtQ[m, -1]
```

Rule 801

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a + c*x^2), x],
x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && IntegerQ[m]
```

Rule 5046

```
Int[((a_.) + ArcCot[(c_) + (d_.)*(x_)]*(b_.))^(p_.)*((e_.) + (f_.)*(x_))^(m
_), x_Symbol] :> Simp[((e + f*x)^(m + 1)*(a + b*ArcCot[c + d*x])^p)/(f*(m +
 1)), x] + Dist[(b*d*p)/(f*(m + 1)), Int[((e + f*x)^(m + 1)*(a + b*ArcCot[c
 + d*x])^(p - 1))/(1 + (c + d*x)^2), x], x] /; FreeQ[{a, b, c, d, e, f}, x]
 && IGtQ[p, 0] && ILtQ[m, -1]
```

Rubi steps

$$\int \frac{\cot^{-1}(a+bx)}{x^4}\,dx = -\frac{\cot^{-1}(a+bx)}{3x^3} - \frac{1}{3}b\int \frac{1}{x^3\left(1+(a+bx)^2\right)}\,dx$$

$$= -\frac{\cot^{-1}(a+bx)}{3x^3} - \frac{1}{3}b^3\,\text{Subst}\left(\int \frac{1}{(-a+x)^3\left(1+x^2\right)}\,dx, x, a+bx\right)$$

$$= \frac{b}{6\left(1+a^2\right)x^2} - \frac{\cot^{-1}(a+bx)}{3x^3} - \frac{b^3\,\text{Subst}\left(\int \frac{-a-x}{(-a+x)^2\left(1+x^2\right)}\,dx, x, a+bx\right)}{3\left(1+a^2\right)}$$

$$= \frac{b}{6\left(1+a^2\right)x^2} - \frac{\cot^{-1}(a+bx)}{3x^3} - \frac{b^3\,\text{Subst}\left(\int \left(-\frac{2a}{\left(1+a^2\right)(a-x)^2} + \frac{1-3a^2}{\left(1+a^2\right)^2(a-x)} + \frac{a\left(3-a^2\right)+\left(1-3a^2\right)\ldots}{\left(1+a^2\right)^2\left(1+x^2\right)}\ldots\right.\right.}{3\left(1+a^2\right)}$$

$$= \frac{b}{6\left(1+a^2\right)x^2} - \frac{2ab^2}{3\left(1+a^2\right)^2x} - \frac{\cot^{-1}(a+bx)}{3x^3} + \frac{\left(1-3a^2\right)b^3\log(x)}{3\left(1+a^2\right)^3} - \frac{b^3\,\text{Subst}\left(\int \frac{a\left(3-a^2\right)\ldots}{\ldots}\right.}{3\left(\ldots\right.}$$

$$= \frac{b}{6\left(1+a^2\right)x^2} - \frac{2ab^2}{3\left(1+a^2\right)^2x} - \frac{\cot^{-1}(a+bx)}{3x^3} + \frac{\left(1-3a^2\right)b^3\log(x)}{3\left(1+a^2\right)^3} - \frac{\left(\left(1-3a^2\right)b^3\right)\text{Sul}\ldots}{3\ldots}$$

$$= \frac{b}{6\left(1+a^2\right)x^2} - \frac{2ab^2}{3\left(1+a^2\right)^2x} - \frac{\cot^{-1}(a+bx)}{3x^3} - \frac{a\left(3-a^2\right)b^3\tan^{-1}(a+bx)}{3\left(1+a^2\right)^3} + \frac{\left(1-3a^2\right)\ldots}{3\left(1+\ldots\right.}$$

Mathematica [C] time = 0.16, size = 126, normalized size = 0.98

$$\frac{2\left(1-3a^2\right)b^3x^3\log(x) + (a-i)bx\left((a+i)\left(a^2-4abx+1\right) + i(a-i)^2b^2x^2\log(a+bx+i)\right) - 2\left(a^2+1\right)^3\cot^{-1}(\ldots}{6\left(a^2+1\right)^3x^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcCot[a + b*x]/x^4,x]
```

```
[Out] (-2*(1 + a^2)^3*ArcCot[a + b*x] + 2*(1 - 3*a^2)*b^3*x^3*Log[x] + (-1 + I*a)
^3*b^3*x^3*Log[I - a - b*x] + (-I + a)*b*x*((I + a)*(1 + a^2 - 4*a*b*x) + I
*(-I + a)^2*b^2*x^2*Log[I + a + b*x]))/(6*(1 + a^2)^3*x^3)
```

fricas [A] time = 0.59, size = 142, normalized size = 1.10

$$\frac{2\left(a^3-3a\right)b^3x^3\arctan(bx+a) + \left(3a^2-1\right)b^3x^3\log\left(b^2x^2+2abx+a^2+1\right) - 2\left(3a^2-1\right)b^3x^3\log(x) - 4\left(a^3\ldots\right.}{6\left(a^6+3a^4+3a^2+1\right)x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(b*x+a)/x^4,x, algorithm="fricas")
```

```
[Out] 1/6*(2*(a^3 - 3*a)*b^3*x^3*arctan(b*x + a) + (3*a^2 - 1)*b^3*x^3*log(b^2*x^
2 + 2*a*b*x + a^2 + 1) - 2*(3*a^2 - 1)*b^3*x^3*log(x) - 4*(a^3 + a)*b^2*x^2
 + (a^4 + 2*a^2 + 1)*b*x - 2*(a^6 + 3*a^4 + 3*a^2 + 1)*arccot(b*x + a))/((a
^6 + 3*a^4 + 3*a^2 + 1)*x^3)
```

giac [B] time = 2.61, size = 3449, normalized size = 26.74

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(b*x+a)/x^4,x, algorithm="giac")
```

```
[Out] -1/6*(24*a^5*b^2*arctan(1/(b*x + a))*tan(1/2*arctan(1/(b*x + a)))^4 + 12*a^
4*b^2*arctan(1/(b*x + a))*tan(1/2*arctan(1/(b*x + a)))^5 + 2*a^3*b^2*arctan
(1/(b*x + a))*tan(1/2*arctan(1/(b*x + a)))^6 + 24*a^5*b^2*log(4*(4*a^2*tan(
1/2*arctan(1/(b*x + a)))^2 + 4*a*tan(1/2*arctan(1/(b*x + a)))^3 + tan(1/2*a
rctan(1/(b*x + a)))^4 - 4*a*tan(1/2*arctan(1/(b*x + a))) - 2*tan(1/2*arctan
(1/(b*x + a)))^2 + 1)/(tan(1/2*arctan(1/(b*x + a)))^4 + 2*tan(1/2*arctan(1/
(b*x + a)))^2 + 1))*tan(1/2*arctan(1/(b*x + a)))^3 + 36*a^4*b^2*log(4*(4*a^
2*tan(1/2*arctan(1/(b*x + a)))^2 + 4*a*tan(1/2*arctan(1/(b*x + a)))^3 + tan
(1/2*arctan(1/(b*x + a)))^4 - 4*a*tan(1/2*arctan(1/(b*x + a))) - 2*tan(1/2*
arctan(1/(b*x + a)))^2 + 1)/(tan(1/2*arctan(1/(b*x + a)))^4 + 2*tan(1/2*arc
tan(1/(b*x + a)))^2 + 1))*tan(1/2*arctan(1/(b*x + a)))^4 + 18*a^3*b^2*log(4
*(4*a^2*tan(1/2*arctan(1/(b*x + a)))^2 + 4*a*tan(1/2*arctan(1/(b*x + a)))^3
 + tan(1/2*arctan(1/(b*x + a)))^4 - 4*a*tan(1/2*arctan(1/(b*x + a))) - 2*ta
n(1/2*arctan(1/(b*x + a)))^2 + 1)/(tan(1/2*arctan(1/(b*x + a)))^4 + 2*tan(1
/2*arctan(1/(b*x + a)))^2 + 1))*tan(1/2*arctan(1/(b*x + a)))^5 + 3*a^2*b^2*
log(4*(4*a^2*tan(1/2*arctan(1/(b*x + a)))^2 + 4*a*tan(1/2*arctan(1/(b*x + a
)))^3 + tan(1/2*arctan(1/(b*x + a)))^4 - 4*a*tan(1/2*arctan(1/(b*x + a))) -
 2*tan(1/2*arctan(1/(b*x + a)))^2 + 1)/(tan(1/2*arctan(1/(b*x + a)))^4 + 2*
tan(1/2*arctan(1/(b*x + a)))^2 + 1))*tan(1/2*arctan(1/(b*x + a)))^6 - 24*a^
5*b^2*arctan(1/(b*x + a))*tan(1/2*arctan(1/(b*x + a)))^2 - 120*a^4*b^2*arct
an(1/(b*x + a))*tan(1/2*arctan(1/(b*x + a)))^3 + 24*a^4*b^2*tan(1/2*arctan(
1/(b*x + a)))^4 - 78*a^3*b^2*arctan(1/(b*x + a))*tan(1/2*arctan(1/(b*x + a)
))^4 + 22*a^3*b^2*tan(1/2*arctan(1/(b*x + a)))^5 - 36*a^2*b^2*arctan(1/(b*x
 + a))*tan(1/2*arctan(1/(b*x + a)))^5 + 5*a^2*b^2*tan(1/2*arctan(1/(b*x + a
)))^6 - 6*a*b^2*arctan(1/(b*x + a))*tan(1/2*arctan(1/(b*x + a)))^6 - 36*a^4
*b^2*log(4*(4*a^2*tan(1/2*arctan(1/(b*x + a)))^2 + 4*a*tan(1/2*arctan(1/(b*
x + a)))^3 + tan(1/2*arctan(1/(b*x + a)))^4 - 4*a*tan(1/2*arctan(1/(b*x + a
))) - 2*tan(1/2*arctan(1/(b*x + a)))^2 + 1)/(tan(1/2*arctan(1/(b*x + a)))^4
 + 2*tan(1/2*arctan(1/(b*x + a)))^2 + 1))*tan(1/2*arctan(1/(b*x + a)))^2 -
44*a^3*b^2*log(4*(4*a^2*tan(1/2*arctan(1/(b*x + a)))^2 + 4*a*tan(1/2*arctan
(1/(b*x + a)))^3 + tan(1/2*arctan(1/(b*x + a)))^4 - 4*a*tan(1/2*arctan(1/(b
*x + a))) - 2*tan(1/2*arctan(1/(b*x + a)))^2 + 1)/(tan(1/2*arctan(1/(b*x +
a)))^4 + 2*tan(1/2*arctan(1/(b*x + a)))^2 + 1))*tan(1/2*arctan(1/(b*x + a))
)^3 - 21*a^2*b^2*log(4*(4*a^2*tan(1/2*arctan(1/(b*x + a)))^2 + 4*a*tan(1/2*
arctan(1/(b*x + a)))^3 + tan(1/2*arctan(1/(b*x + a)))^4 - 4*a*tan(1/2*arcta
n(1/(b*x + a))) - 2*tan(1/2*arctan(1/(b*x + a)))^2 + 1)/(tan(1/2*arctan(1/(
b*x + a)))^4 + 2*tan(1/2*arctan(1/(b*x + a)))^2 + 1))*tan(1/2*arctan(1/(b*x
 + a)))^4 - 6*a*b^2*log(4*(4*a^2*tan(1/2*arctan(1/(b*x + a)))^2 + 4*a*tan(1
/2*arctan(1/(b*x + a)))^3 + tan(1/2*arctan(1/(b*x + a)))^4 - 4*a*tan(1/2*ar
ctan(1/(b*x + a))) - 2*tan(1/2*arctan(1/(b*x + a)))^2 + 1)/(tan(1/2*arctan(
1/(b*x + a)))^4 + 2*tan(1/2*arctan(1/(b*x + a)))^2 + 1))*tan(1/2*arctan(1/(
b*x + a)))^5 - b^2*log(4*(4*a^2*tan(1/2*arctan(1/(b*x + a)))^2 + 4*a*tan(1/
2*arctan(1/(b*x + a)))^3 + tan(1/2*arctan(1/(b*x + a)))^4 - 4*a*tan(1/2*arc
tan(1/(b*x + a))) - 2*tan(1/2*arctan(1/(b*x + a)))^2 + 1)/(tan(1/2*arctan(1
```

```
/(b*x + a)))^4 + 2*tan(1/2*arctan(1/(b*x + a)))^2 + 1))*tan(1/2*arctan(1/(b
*x + a)))^6 + 12*a^4*b^2*arctan(1/(b*x + a))*tan(1/2*arctan(1/(b*x + a))) -
 24*a^4*b^2*tan(1/2*arctan(1/(b*x + a)))^2 + 78*a^3*b^2*arctan(1/(b*x + a))
*tan(1/2*arctan(1/(b*x + a)))^2 - 100*a^3*b^2*tan(1/2*arctan(1/(b*x + a)))^
3 + 24*a^2*b^2*arctan(1/(b*x + a))*tan(1/2*arctan(1/(b*x + a)))^3 - 67*a^2*
b^2*tan(1/2*arctan(1/(b*x + a)))^4 + 18*a*b^2*arctan(1/(b*x + a))*tan(1/2*a
rctan(1/(b*x + a)))^4 - 14*a*b^2*tan(1/2*arctan(1/(b*x + a)))^5 - b^2*tan(1
/2*arctan(1/(b*x + a)))^6 + 18*a^3*b^2*log(4*(4*a^2*tan(1/2*arctan(1/(b*x +
 a)))^2 + 4*a*tan(1/2*arctan(1/(b*x + a)))^3 + tan(1/2*arctan(1/(b*x + a)))
^4 - 4*a*tan(1/2*arctan(1/(b*x + a))) - 2*tan(1/2*arctan(1/(b*x + a)))^2 +
1)/(tan(1/2*arctan(1/(b*x + a)))^4 + 2*tan(1/2*arctan(1/(b*x + a)))^2 + 1))
*tan(1/2*arctan(1/(b*x + a))) + 21*a^2*b^2*log(4*(4*a^2*tan(1/2*arctan(1/(b
*x + a)))^2 + 4*a*tan(1/2*arctan(1/(b*x + a)))^3 + tan(1/2*arctan(1/(b*x +
a)))^4 - 4*a*tan(1/2*arctan(1/(b*x + a))) - 2*tan(1/2*arctan(1/(b*x + a)))^
2 + 1)/(tan(1/2*arctan(1/(b*x + a)))^4 + 2*tan(1/2*arctan(1/(b*x + a)))^2 +
 1))*tan(1/2*arctan(1/(b*x + a)))^2 + 12*a*b^2*log(4*(4*a^2*tan(1/2*arctan(
1/(b*x + a)))^2 + 4*a*tan(1/2*arctan(1/(b*x + a)))^3 + tan(1/2*arctan(1/(b*
x + a)))^4 - 4*a*tan(1/2*arctan(1/(b*x + a))) - 2*tan(1/2*arctan(1/(b*x + a
)))^2 + 1)/(tan(1/2*arctan(1/(b*x + a)))^4 + 2*tan(1/2*arctan(1/(b*x + a)))
^2 + 1))*tan(1/2*arctan(1/(b*x + a)))^3 + 3*b^2*log(4*(4*a^2*tan(1/2*arctan
(1/(b*x + a)))^2 + 4*a*tan(1/2*arctan(1/(b*x + a)))^3 + tan(1/2*arctan(1/(b
*x + a)))^4 - 4*a*tan(1/2*arctan(1/(b*x + a))) - 2*tan(1/2*arctan(1/(b*x +
a)))^2 + 1)/(tan(1/2*arctan(1/(b*x + a)))^4 + 2*tan(1/2*arctan(1/(b*x + a))
)^2 + 1))*tan(1/2*arctan(1/(b*x + a)))^4 - 2*a^3*b^2*arctan(1/(b*x + a)) +
22*a^3*b^2*tan(1/2*arctan(1/(b*x + a))) - 36*a^2*b^2*arctan(1/(b*x + a))*ta
n(1/2*arctan(1/(b*x + a))) + 67*a^2*b^2*tan(1/2*arctan(1/(b*x + a)))^2 - 18
*a*b^2*arctan(1/(b*x + a))*tan(1/2*arctan(1/(b*x + a)))^2 + 20*a*b^2*tan(1/
2*arctan(1/(b*x + a)))^3 - 16*b^2*arctan(1/(b*x + a))*tan(1/2*arctan(1/(b*x
 + a)))^3 - b^2*tan(1/2*arctan(1/(b*x + a)))^4 - 3*a^2*b^2*log(4*(4*a^2*tan
(1/2*arctan(1/(b*x + a)))^2 + 4*a*tan(1/2*arctan(1/(b*x + a)))^3 + tan(1/2*
arctan(1/(b*x + a)))^4 - 4*a*tan(1/2*arctan(1/(b*x + a))) - 2*tan(1/2*arcta
n(1/(b*x + a)))^2 + 1)/(tan(1/2*arctan(1/(b*x + a)))^4 + 2*tan(1/2*arctan(1
/(b*x + a)))^2 + 1)) - 6*a*b^2*log(4*(4*a^2*tan(1/2*arctan(1/(b*x + a)))^2
+ 4*a*tan(1/2*arctan(1/(b*x + a)))^3 + tan(1/2*arctan(1/(b*x + a)))^4 - 4*a
*tan(1/2*arctan(1/(b*x + a))) - 2*tan(1/2*arctan(1/(b*x + a)))^2 + 1)/(tan(
1/2*arctan(1/(b*x + a)))^4 + 2*tan(1/2*arctan(1/(b*x + a)))^2 + 1))*tan(1/2
*arctan(1/(b*x + a))) - 3*b^2*log(4*(4*a^2*tan(1/2*arctan(1/(b*x + a)))^2 +
 4*a*tan(1/2*arctan(1/(b*x + a)))^3 + tan(1/2*arctan(1/(b*x + a)))^4 - 4*a*
tan(1/2*arctan(1/(b*x + a))) - 2*tan(1/2*arctan(1/(b*x + a)))^2 + 1)/(tan(1
/2*arctan(1/(b*x + a)))^4 + 2*tan(1/2*arctan(1/(b*x + a)))^2 + 1))*tan(1/2*
arctan(1/(b*x + a)))^2 - 5*a^2*b^2 + 6*a*b^2*arctan(1/(b*x + a)) - 14*a*b^2
*tan(1/2*arctan(1/(b*x + a))) + b^2*tan(1/2*arctan(1/(b*x + a)))^2 + b^2*lo
g(4*(4*a^2*tan(1/2*arctan(1/(b*x + a)))^2 + 4*a*tan(1/2*arctan(1/(b*x + a))
)^3 + tan(1/2*arctan(1/(b*x + a)))^4 - 4*a*tan(1/2*arctan(1/(b*x + a))) - 2
*tan(1/2*arctan(1/(b*x + a)))^2 + 1)/(tan(1/2*arctan(1/(b*x + a)))^4 + 2*ta
n(1/2*arctan(1/(b*x + a)))^2 + 1)) + b^2)*b/(8*a^9*tan(1/2*arctan(1/(b*x +
a)))^3 + 12*a^8*tan(1/2*arctan(1/(b*x + a)))^4 + 6*a^7*tan(1/2*arctan(1/(b*
x + a)))^5 + a^6*tan(1/2*arctan(1/(b*x + a)))^6 - 12*a^8*tan(1/2*arctan(1/(
b*x + a)))^2 + 12*a^7*tan(1/2*arctan(1/(b*x + a)))^3 + 33*a^6*tan(1/2*arcta
n(1/(b*x + a)))^4 + 18*a^5*tan(1/2*arctan(1/(b*x + a)))^5 + 3*a^4*tan(1/2*a
rctan(1/(b*x + a)))^6 + 6*a^7*tan(1/2*arctan(1/(b*x + a))) - 33*a^6*tan(1/2
*arctan(1/(b*x + a)))^2 - 12*a^5*tan(1/2*arctan(1/(b*x + a)))^3 + 27*a^4*ta
n(1/2*arctan(1/(b*x + a)))^4 + 18*a^3*tan(1/2*arctan(1/(b*x + a)))^5 + 3*a^
2*tan(1/2*arctan(1/(b*x + a)))^6 - a^6 + 18*a^5*tan(1/2*arctan(1/(b*x + a))
) - 27*a^4*tan(1/2*arctan(1/(b*x + a)))^2 - 28*a^3*tan(1/2*arctan(1/(b*x +
a)))^3 + 3*a^2*tan(1/2*arctan(1/(b*x + a)))^4 + 6*a*tan(1/2*arctan(1/(b*x +
 a)))^5 + tan(1/2*arctan(1/(b*x + a)))^6 - 3*a^4 + 18*a^3*tan(1/2*arctan(1/
(b*x + a))) - 3*a^2*tan(1/2*arctan(1/(b*x + a)))^2 - 12*a*tan(1/2*arctan(1/
(b*x + a)))^3 - 3*tan(1/2*arctan(1/(b*x + a)))^4 - 3*a^2 + 6*a*tan(1/2*arct
```

```
an(1/(b*x + a))) + 3*tan(1/2*arctan(1/(b*x + a)))^2 - 1)
```

maple [A] time = 0.05, size = 164, normalized size = 1.27

$$-\frac{\operatorname{arccot}(bx+a)}{3x^3}+\frac{b}{6\left(a^2+1\right)x^2}-\frac{b^3\ln(bx)\,a^2}{\left(a^2+1\right)^3}+\frac{b^3\ln(bx)}{3\left(a^2+1\right)^3}-\frac{2a\,b^2}{3\left(a^2+1\right)^2x}+\frac{b^3\ln\left(1+(bx+a)^2\right)a^2}{2\left(a^2+1\right)^3}-\frac{b^3\ln\left(1+(bx\right.}{6\left(a^2+1\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arccot(b*x+a)/x^4,x)
```

```
[Out] -1/3*arccot(b*x+a)/x^3+1/6*b/(a^2+1)/x^2-b^3/(a^2+1)^3*ln(b*x)*a^2+1/3*b^3/
(a^2+1)^3*ln(b*x)-2/3*a*b^2/(a^2+1)^2/x+1/2*b^3/(a^2+1)^3*ln(1+(b*x+a)^2)*a
^2-1/6*b^3/(a^2+1)^3*ln(1+(b*x+a)^2)+1/3*b^3/(a^2+1)^3*arctan(b*x+a)*a^3-b^
3/(a^2+1)^3*arctan(b*x+a)*a
```

maxima [A] time = 0.42, size = 165, normalized size = 1.28

$$\frac{1}{6}\left(\frac{2\left(a^3-3a\right)b^2\arctan\left(\frac{b^2x+ab}{b}\right)}{a^6+3a^4+3a^2+1}+\frac{\left(3a^2-1\right)b^2\log\left(b^2x^2+2abx+a^2+1\right)}{a^6+3a^4+3a^2+1}-\frac{2\left(3a^2-1\right)b^2\log(x)}{a^6+3a^4+3a^2+1}-\frac{4abx-a^2}{\left(a^4+2a^2\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(b*x+a)/x^4,x, algorithm="maxima")
```

```
[Out] 1/6*(2*(a^3 - 3*a)*b^2*arctan((b^2*x + a*b)/b)/(a^6 + 3*a^4 + 3*a^2 + 1) +
(3*a^2 - 1)*b^2*log(b^2*x^2 + 2*a*b*x + a^2 + 1)/(a^6 + 3*a^4 + 3*a^2 + 1)
- 2*(3*a^2 - 1)*b^2*log(x)/(a^6 + 3*a^4 + 3*a^2 + 1) - (4*a*b*x - a^2 - 1)/
((a^4 + 2*a^2 + 1)*x^2))*b - 1/3*arccot(b*x + a)/x^3
```

mupad [B] time = 1.24, size = 285, normalized size = 2.21

$$\frac{\ln(x)\left(\frac{b^3}{3}-a^2b^3\right)}{a^6+3a^4+3a^2+1}-\frac{\operatorname{acot}(a+bx)\left(\frac{a^2}{3}+\frac{1}{3}\right)-\frac{bx}{6}+\frac{b^2x^2\operatorname{acot}(a+bx)}{3}-\frac{x^3\left(b^3-7a^2b^3\right)}{6\left(a^4+2a^2+1\right)}+\frac{ab^2x^2}{3\left(a^2+1\right)}+\frac{2ab^4x^4}{3\left(a^2+1\right)^2}+\frac{2abx\operatorname{acot}(a}{3}}{a^2x^3+2abx^4+b^2x^5+x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(acot(a + b*x)/x^4,x)
```

```
[Out] (log(x)*(b^3/3 - a^2*b^3))/(3*a^2 + 3*a^4 + a^6 + 1) - (acot(a + b*x)*(a^2/
3 + 1/3) - (b*x)/6 + (b^2*x^2*acot(a + b*x))/3 - (x^3*(b^3 - 7*a^2*b^3))/(6
*(2*a^2 + a^4 + 1)) + (a*b^2*x^2)/(3*(a^2 + 1)) + (2*a*b^4*x^4)/(3*(a^2 + 1
)^2) + (2*a*b*x*acot(a + b*x))/3)/(x^3 + a^2*x^3 + b^2*x^5 + 2*a*b*x^4) + (
b^3*log(a^2 + b^2*x^2 + 2*a*b*x + 1)*(3*a^2 - 1))/(6*(3*a^2 + 3*a^4 + a^6 +
 1)) + (a*atan((2*a*b + 2*b^2*x)/(2*(b^2*(a^2 + 1) - a^2*b^2)^(1/2)))*(a^2
- 3)*(b^2)^(3/2))/(3*(3*a^2 + 3*a^4 + a^6 + 1))
```

sympy [B] time = 4.51, size = 760, normalized size = 5.89

$$\begin{cases}\frac{ib^3\operatorname{acot}(bx-i)}{24}-\frac{ib^2}{24x}+\frac{b}{24x^2}-\frac{\operatorname{acot}(bx-i)}{3x^3}+\frac{i}{18x^3}\\ -\frac{ib^3\operatorname{acot}(bx+i)}{24}+\frac{ib^2}{24x}+\frac{b}{24x^2}-\frac{\operatorname{acot}(bx+i)}{3x^3}-\frac{i}{18x^3}\\ -\frac{2a^6\operatorname{acot}(a+bx)}{6a^6x^3+18a^4x^3+18a^2x^3+6x^3}+\frac{a^4bx}{6a^6x^3+18a^4x^3+18a^2x^3+6x^3}-\frac{6a^4\operatorname{acot}(a+bx)}{6a^6x^3+18a^4x^3+18a^2x^3+6x^3}-\frac{2a^3b^3x^3\operatorname{acot}(a+bx)}{6a^6x^3+18a^4x^3+18a^2x^3+6x^3}-\frac{4a^3b^2x}{6a^6x^3+18a^4x^3+1}\end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(acot(b*x+a)/x**4,x)
```

```
[Out] Piecewise((I*b**3*acot(b*x - I)/24 - I*b**2/(24*x) + b/(24*x**2) - acot(b*x
 - I)/(3*x**3) + I/(18*x**3), Eq(a, -I)), (-I*b**3*acot(b*x + I)/24 + I*b**
2/(24*x) + b/(24*x**2) - acot(b*x + I)/(3*x**3) - I/(18*x**3), Eq(a, I)), (
-2*a**6*acot(a + b*x)/(6*a**6*x**3 + 18*a**4*x**3 + 18*a**2*x**3 + 6*x**3)
+ a**4*b*x/(6*a**6*x**3 + 18*a**4*x**3 + 18*a**2*x**3 + 6*x**3) - 6*a**4*ac
ot(a + b*x)/(6*a**6*x**3 + 18*a**4*x**3 + 18*a**2*x**3 + 6*x**3) - 2*a**3*b
**3*x**3*acot(a + b*x)/(6*a**6*x**3 + 18*a**4*x**3 + 18*a**2*x**3 + 6*x**3)
 - 4*a**3*b**2*x**2/(6*a**6*x**3 + 18*a**4*x**3 + 18*a**2*x**3 + 6*x**3) -
6*a**2*b**3*x**3*log(x)/(6*a**6*x**3 + 18*a**4*x**3 + 18*a**2*x**3 + 6*x**3
) + 3*a**2*b**3*x**3*log(a**2 + 2*a*b*x + b**2*x**2 + 1)/(6*a**6*x**3 + 18*
a**4*x**3 + 18*a**2*x**3 + 6*x**3) + 2*a**2*b*x/(6*a**6*x**3 + 18*a**4*x**3
 + 18*a**2*x**3 + 6*x**3) - 6*a**2*acot(a + b*x)/(6*a**6*x**3 + 18*a**4*x**
3 + 18*a**2*x**3 + 6*x**3) + 6*a*b**3*x**3*acot(a + b*x)/(6*a**6*x**3 + 18*
a**4*x**3 + 18*a**2*x**3 + 6*x**3) - 4*a*b**2*x**2/(6*a**6*x**3 + 18*a**4*x
**3 + 18*a**2*x**3 + 6*x**3) + 2*b**3*x**3*log(x)/(6*a**6*x**3 + 18*a**4*x*
*3 + 18*a**2*x**3 + 6*x**3) - b**3*x**3*log(a**2 + 2*a*b*x + b**2*x**2 + 1)
/(6*a**6*x**3 + 18*a**4*x**3 + 18*a**2*x**3 + 6*x**3) + b*x/(6*a**6*x**3 +
18*a**4*x**3 + 18*a**2*x**3 + 6*x**3) - 2*acot(a + b*x)/(6*a**6*x**3 + 18*a
**4*x**3 + 18*a**2*x**3 + 6*x**3), True))
```

3.107 $\int \frac{\cot^{-1}(a+bx)}{c+dx^2}\,dx$

Optimal. Leaf size=642

$$\frac{\text{Li}_2\left(-\frac{\left(b\sqrt{c}-ia\sqrt{d}\right)(-a-bx+i)}{\left(b\sqrt{c}-(ia+1)\sqrt{d}\right)(a+bx)}\right)}{4\sqrt{c}\sqrt{d}}-\frac{\text{Li}_2\left(-\frac{\left(i\sqrt{d}a+b\sqrt{c}\right)(-a-bx+i)}{\left(\sqrt{d}(ia+1)+b\sqrt{c}\right)(a+bx)}\right)}{4\sqrt{c}\sqrt{d}}-\frac{\text{Li}_2\left(\frac{\left(b\sqrt{c}-ia\sqrt{d}\right)(a+bx+i)}{\left(\sqrt{d}(1-ia)+b\sqrt{c}\right)(a+bx)}\right)}{4\sqrt{c}\sqrt{d}}+\frac{\text{Li}_2\left(\frac{\left(i\sqrt{d}a+b\sqrt{c}\right)(a+bx+i)}{\left(i\sqrt{d}(a+i)+b\sqrt{c}\right)(a+bx)}\right)}{4\sqrt{c}\sqrt{d}}-\frac{\text{lo}}{}$$

```
[Out] -1/4*ln((I+a+b*x)/(b*x+a))*ln(-b*(I*c^(1/2)-x*d^(1/2))/(b*x+a)/(b*c^(1/2)+(
1-I*a)*d^(1/2)))/c^(1/2)/d^(1/2)+1/4*ln((-I+a+b*x)/(b*x+a))*ln(I*b*(c^(1/2)
+I*x*d^(1/2))/(b*x+a)/(b*c^(1/2)-(1+I*a)*d^(1/2)))/c^(1/2)/d^(1/2)-1/4*ln((
-I+a+b*x)/(b*x+a))*ln(b*(I*c^(1/2)+x*d^(1/2))/(b*x+a)/(b*c^(1/2)+(1+I*a)*d^
(1/2)))/c^(1/2)/d^(1/2)+1/4*ln((I+a+b*x)/(b*x+a))*ln(-b*(I*c^(1/2)+x*d^(1/2
))/(b*x+a)/(b*c^(1/2)+I*(I+a)*d^(1/2)))/c^(1/2)/d^(1/2)-1/4*polylog(2,(I+a+
b*x)*(b*c^(1/2)-I*a*d^(1/2))/(b*x+a)/(b*c^(1/2)+(1-I*a)*d^(1/2)))/c^(1/2)/d
^(1/2)+1/4*polylog(2,-(I-a-b*x)*(b*c^(1/2)-I*a*d^(1/2))/(b*x+a)/(b*c^(1/2)-
(1+I*a)*d^(1/2)))/c^(1/2)/d^(1/2)-1/4*polylog(2,-(I-a-b*x)*(b*c^(1/2)+I*a*d
^(1/2))/(b*x+a)/(b*c^(1/2)+(1+I*a)*d^(1/2)))/c^(1/2)/d^(1/2)+1/4*polylog(2,
(I+a+b*x)*(b*c^(1/2)+I*a*d^(1/2))/(b*x+a)/(b*c^(1/2)+I*(I+a)*d^(1/2)))/c^(1
/2)/d^(1/2)
```

Rubi [A] time = 1.00, antiderivative size = 655, normalized size of antiderivative = 1.02, number of steps used = 37, number of rules used = 7, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}} = 0.438$, Rules used = {5052, 2513, 2409, 2394, 2393, 2391, 205}

$$\frac{i\text{PolyLog}\left(2,-\frac{\sqrt{d}(-a-bx+i)}{b\sqrt{-c}-(-a+i)\sqrt{d}}\right)}{4\sqrt{-c}\sqrt{d}}-\frac{i\text{PolyLog}\left(2,\frac{\sqrt{d}(-a-bx+i)}{b\sqrt{-c}+(-a+i)\sqrt{d}}\right)}{4\sqrt{-c}\sqrt{d}}+\frac{i\text{PolyLog}\left(2,-\frac{\sqrt{d}(a+bx+i)}{b\sqrt{-c}-(a+i)\sqrt{d}}\right)}{4\sqrt{-c}\sqrt{d}}-\frac{i\text{PolyLog}\left(2,\frac{\sqrt{d}(a}{b\sqrt{-c}+}\right.}{4\sqrt{-c}\sqrt{d}}$$

Warning: Unable to verify antiderivative.

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

```
[Out] ((I/2)*ArcTan[(Sqrt[d]*x)/Sqrt[c]]*(Log[-((I - a - b*x)/(a + b*x))] + Log[a
 + b*x] - Log[-I + a + b*x]))/(Sqrt[c]*Sqrt[d]) - ((I/2)*ArcTan[(Sqrt[d]*x)
/Sqrt[c]]*(Log[a + b*x] - Log[I + a + b*x] + Log[(I + a + b*x)/(a + b*x)]))
/(Sqrt[c]*Sqrt[d]) + ((I/4)*Log[-I + a + b*x]*Log[(b*(Sqrt[-c] - Sqrt[d]*x)
)/(b*Sqrt[-c] - (I - a)*Sqrt[d])])/(Sqrt[-c]*Sqrt[d]) - ((I/4)*Log[I + a +
b*x]*Log[(b*(Sqrt[-c] - Sqrt[d]*x))/(b*Sqrt[-c] + (I + a)*Sqrt[d])])/(Sqrt[
-c]*Sqrt[d]) - ((I/4)*Log[-I + a + b*x]*Log[(b*(Sqrt[-c] + Sqrt[d]*x))/(b*S
qrt[-c] + (I - a)*Sqrt[d])])/(Sqrt[-c]*Sqrt[d]) + ((I/4)*Log[I + a + b*x]*L
og[(b*(Sqrt[-c] + Sqrt[d]*x))/(b*Sqrt[-c] - (I + a)*Sqrt[d])])/(Sqrt[-c]*Sq
rt[d]) + ((I/4)*PolyLog[2, -((Sqrt[d]*(I - a - b*x))/(b*Sqrt[-c] - (I - a)*
Sqrt[d]))])/(Sqrt[-c]*Sqrt[d]) - ((I/4)*PolyLog[2, (Sqrt[d]*(I - a - b*x))/
(b*Sqrt[-c] + (I - a)*Sqrt[d])])/(Sqrt[-c]*Sqrt[d]) + ((I/4)*PolyLog[2, -((
Sqrt[d]*(I + a + b*x))/(b*Sqrt[-c] - (I + a)*Sqrt[d]))])/(Sqrt[-c]*Sqrt[d])
 - ((I/4)*PolyLog[2, (Sqrt[d]*(I + a + b*x))/(b*Sqrt[-c] + (I + a)*Sqrt[d])
])/(Sqrt[-c]*Sqrt[d])
```

Rule 205

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

Rule 2391

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

Rule 2393

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

Rule 2394

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

Rule 2409

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_)^(r_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*Log[c*(d + e*x)
^n])^p, (f + g*x^r)^q, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, r}, x] && I
GtQ[p, 0] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[r] && NeQ[r, 1]))
```

Rule 2513

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]*(RFx_.), x_Symbol] :> Dist[p*r, Int[RFx*Log[a + b*x], x], x] + (Dis
t[q*r, Int[RFx*Log[c + d*x], x], x] - Dist[p*r*Log[a + b*x] + q*r*Log[c + d
*x] - Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r], Int[RFx, x], x]) /; FreeQ[{a, b
, c, d, e, f, p, q, r}, x] && RationalFunctionQ[RFx, x] && NeQ[b*c - a*d, 0
] &&  !MatchQ[RFx, (u_.)*(a + b*x)^(m_.)*(c + d*x)^(n_.) /; IntegersQ[m, n]
]
```

Rule 5052

```
Int[ArcCot[(a_) + (b_.)*(x_)]/((c_) + (d_.)*(x_)^(n_.)), x_Symbol] :> Dist[
I/2, Int[Log[(-I + a + b*x)/(a + b*x)]/(c + d*x^n), x], x] - Dist[I/2, Int[
Log[(I + a + b*x)/(a + b*x)]/(c + d*x^n), x], x] /; FreeQ[{a, b, c, d}, x]
&& RationalQ[n]
```

Rubi steps

$$\int \frac{\cot^{-1}(a+bx)}{c+dx^2}\,dx = \frac{1}{2}i\int \frac{\log\left(\frac{-i+a+bx}{a+bx}\right)}{c+dx^2}\,dx - \frac{1}{2}i\int \frac{\log\left(\frac{i+a+bx}{a+bx}\right)}{c+dx^2}\,dx$$
$$= \frac{1}{2}i\int \frac{\log(-i+a+bx)}{c+dx^2}\,dx - \frac{1}{2}i\int \frac{\log(i+a+bx)}{c+dx^2}\,dx - \frac{1}{2}\left(i\left(-\log(a+bx)+\log(-i+a+\right.\right.$$
$$= \frac{i\tan^{-1}\left(\frac{\sqrt{d}\,x}{\sqrt{c}}\right)\left(\log\left(-\frac{i-a-bx}{a+bx}\right)+\log(a+bx)-\log(-i+a+bx)\right)}{2\sqrt{c}\,\sqrt{d}} - \frac{i\tan^{-1}\left(\frac{\sqrt{d}\,x}{\sqrt{c}}\right)\left(\log(a+b\right.}{}$$
$$= \frac{i\tan^{-1}\left(\frac{\sqrt{d}\,x}{\sqrt{c}}\right)\left(\log\left(-\frac{i-a-bx}{a+bx}\right)+\log(a+bx)-\log(-i+a+bx)\right)}{2\sqrt{c}\,\sqrt{d}} - \frac{i\tan^{-1}\left(\frac{\sqrt{d}\,x}{\sqrt{c}}\right)\left(\log(a+b\right.}{}$$
$$= \frac{i\tan^{-1}\left(\frac{\sqrt{d}\,x}{\sqrt{c}}\right)\left(\log\left(-\frac{i-a-bx}{a+bx}\right)+\log(a+bx)-\log(-i+a+bx)\right)}{2\sqrt{c}\,\sqrt{d}} - \frac{i\tan^{-1}\left(\frac{\sqrt{d}\,x}{\sqrt{c}}\right)\left(\log(a+b\right.}{}$$
$$= \frac{i\tan^{-1}\left(\frac{\sqrt{d}\,x}{\sqrt{c}}\right)\left(\log\left(-\frac{i-a-bx}{a+bx}\right)+\log(a+bx)-\log(-i+a+bx)\right)}{2\sqrt{c}\,\sqrt{d}} - \frac{i\tan^{-1}\left(\frac{\sqrt{d}\,x}{\sqrt{c}}\right)\left(\log(a+b\right.}{}$$
$$= \frac{i\tan^{-1}\left(\frac{\sqrt{d}\,x}{\sqrt{c}}\right)\left(\log\left(-\frac{i-a-bx}{a+bx}\right)+\log(a+bx)-\log(-i+a+bx)\right)}{2\sqrt{c}\,\sqrt{d}} - \frac{i\tan^{-1}\left(\frac{\sqrt{d}\,x}{\sqrt{c}}\right)\left(\log(a+b\right.}{}$$

Mathematica [A] time = 0.60, size = 563, normalized size = 0.88

$$-\frac{i\left(\text{Li}_2\left(\frac{b\left(\sqrt{-c}-\sqrt{d}\,x\right)}{\sqrt{d}\,(a-i)+b\sqrt{-c}}\right)-\text{Li}_2\left(\frac{b\left(\sqrt{-c}-\sqrt{d}\,x\right)}{\sqrt{d}\,(a+i)+b\sqrt{-c}}\right)-\text{Li}_2\left(\frac{b\left(\sqrt{d}\,x+\sqrt{-c}\right)}{b\sqrt{-c}-(a-i)\sqrt{d}}\right)+\text{Li}_2\left(\frac{b\left(\sqrt{d}\,x+\sqrt{-c}\right)}{b\sqrt{-c}-(a+i)\sqrt{d}}\right)+\log\left(\sqrt{-c}-\sqrt{d}\,x\right)\log\left(\right.}{}$$

Warning: Unable to verify antiderivative.

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

```
[Out] ((-1/4*I)*(Log[(Sqrt[d]*(-I + a + b*x))/(b*Sqrt[-c] + (-I + a)*Sqrt[d])]*Lo
g[Sqrt[-c] - Sqrt[d]*x] - Log[(-I + a + b*x)/(a + b*x)]*Log[Sqrt[-c] - Sqrt
[d]*x] - Log[(Sqrt[d]*(I + a + b*x))/(b*Sqrt[-c] + (I + a)*Sqrt[d])]*Log[Sq
rt[-c] - Sqrt[d]*x] + Log[(I + a + b*x)/(a + b*x)]*Log[Sqrt[-c] - Sqrt[d]*x
] - Log[-((Sqrt[d]*(-I + a + b*x))/(b*Sqrt[-c] - (-I + a)*Sqrt[d]))]*Log[Sq
rt[-c] + Sqrt[d]*x] + Log[(-I + a + b*x)/(a + b*x)]*Log[Sqrt[-c] + Sqrt[d]*
x] + Log[-((Sqrt[d]*(I + a + b*x))/(b*Sqrt[-c] - (I + a)*Sqrt[d]))]*Log[Sqr
t[-c] + Sqrt[d]*x] - Log[(I + a + b*x)/(a + b*x)]*Log[Sqrt[-c] + Sqrt[d]*x]
 + PolyLog[2, (b*(Sqrt[-c] - Sqrt[d]*x))/(b*Sqrt[-c] + (-I + a)*Sqrt[d])] -
 PolyLog[2, (b*(Sqrt[-c] - Sqrt[d]*x))/(b*Sqrt[-c] + (I + a)*Sqrt[d])] - Po
lyLog[2, (b*(Sqrt[-c] + Sqrt[d]*x))/(b*Sqrt[-c] - (-I + a)*Sqrt[d])] + Poly
Log[2, (b*(Sqrt[-c] + Sqrt[d]*x))/(b*Sqrt[-c] - (I + a)*Sqrt[d])]))/(Sqrt[-
c]*Sqrt[d])
```

fricas [F] time = 1.50, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\text{arccot}\,(bx+a)}{dx^2+c}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Timed out
```

maple [B] time = 1.39, size = 2082, normalized size = 3.24

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -I*b/(a^2*d+c*b^2+2*(b^2*c*d)^(1/2)+d)*ln(1-(-2*I*a*d+a^2*d+c*b^2-d)*(I+a+b
*x)^2/(1+(b*x+a)^2)/(a^2*d+c*b^2+2*(b^2*c*d)^(1/2)+d))*arccot(b*x+a)+1/2*I/
b*(b^2*c*d)^(1/2)/c/(a^2*d+c*b^2-2*(b^2*c*d)^(1/2)+d)*ln(1-(-2*I*a*d+a^2*d+
c*b^2-d)*(I+a+b*x)^2/(1+(b*x+a)^2)/(a^2*d+c*b^2-2*(b^2*c*d)^(1/2)+d))*arcco
t(b*x+a)*a^2+1/2*I*b/d*(b^2*c*d)^(1/2)/(a^2*d+c*b^2-2*(b^2*c*d)^(1/2)+d)*ln
(1-(-2*I*a*d+a^2*d+c*b^2-d)*(I+a+b*x)^2/(1+(b*x+a)^2)/(a^2*d+c*b^2-2*(b^2*c
*d)^(1/2)+d))*arccot(b*x+a)-1/2*I/b*(b^2*c*d)^(1/2)/c/(a^2*d+c*b^2+2*(b^2*c
*d)^(1/2)+d)*ln(1-(-2*I*a*d+a^2*d+c*b^2-d)*(I+a+b*x)^2/(1+(b*x+a)^2)/(a^2*d
+c*b^2+2*(b^2*c*d)^(1/2)+d))*arccot(b*x+a)*a^2-1/2*b/d*(b^2*c*d)^(1/2)/(a^2
*d+c*b^2+2*(b^2*c*d)^(1/2)+d)*arccot(b*x+a)^2-b/(a^2*d+c*b^2+2*(b^2*c*d)^(1
/2)+d)*arccot(b*x+a)^2-1/2/b*(b^2*c*d)^(1/2)/c/(a^2*d+c*b^2+2*(b^2*c*d)^(1/
2)+d)*arccot(b*x+a)^2-1/2/b*(b^2*c*d)^(1/2)/c/(a^2*d+c*b^2+2*(b^2*c*d)^(1/2
)+d)*arccot(b*x+a)^2*a^2-1/4*b/d*(b^2*c*d)^(1/2)/(a^2*d+c*b^2+2*(b^2*c*d)^(
1/2)+d)*polylog(2,(-2*I*a*d+a^2*d+c*b^2-d)*(I+a+b*x)^2/(1+(b*x+a)^2)/(a^2*d
+c*b^2+2*(b^2*c*d)^(1/2)+d))-1/2*b/(a^2*d+c*b^2+2*(b^2*c*d)^(1/2)+d)*polylo
g(2,(-2*I*a*d+a^2*d+c*b^2-d)*(I+a+b*x)^2/(1+(b*x+a)^2)/(a^2*d+c*b^2+2*(b^2*
c*d)^(1/2)+d))-1/4/b*(b^2*c*d)^(1/2)/c/(a^2*d+c*b^2+2*(b^2*c*d)^(1/2)+d)*po
lylog(2,(-2*I*a*d+a^2*d+c*b^2-d)*(I+a+b*x)^2/(1+(b*x+a)^2)/(a^2*d+c*b^2+2*(
b^2*c*d)^(1/2)+d))-1/4/b*(b^2*c*d)^(1/2)/c/(a^2*d+c*b^2+2*(b^2*c*d)^(1/2)+d
)*polylog(2,(-2*I*a*d+a^2*d+c*b^2-d)*(I+a+b*x)^2/(1+(b*x+a)^2)/(a^2*d+c*b^2
+2*(b^2*c*d)^(1/2)+d))*a^2-1/2*I/b*(b^2*c*d)^(1/2)/c/(a^2*d+c*b^2+2*(b^2*c*
d)^(1/2)+d)*ln(1-(-2*I*a*d+a^2*d+c*b^2-d)*(I+a+b*x)^2/(1+(b*x+a)^2)/(a^2*d+
c*b^2+2*(b^2*c*d)^(1/2)+d))*arccot(b*x+a)-I*b/(a^2*d+c*b^2-2*(b^2*c*d)^(1/2
)+d)*ln(1-(-2*I*a*d+a^2*d+c*b^2-d)*(I+a+b*x)^2/(1+(b*x+a)^2)/(a^2*d+c*b^2-2
*(b^2*c*d)^(1/2)+d))*arccot(b*x+a)+1/2*I/b*(b^2*c*d)^(1/2)/c/(a^2*d+c*b^2-2
*(b^2*c*d)^(1/2)+d)*ln(1-(-2*I*a*d+a^2*d+c*b^2-d)*(I+a+b*x)^2/(1+(b*x+a)^2)
/(a^2*d+c*b^2-2*(b^2*c*d)^(1/2)+d))*arccot(b*x+a)-1/2*I*b/d*(b^2*c*d)^(1/2)
/(a^2*d+c*b^2+2*(b^2*c*d)^(1/2)+d)*ln(1-(-2*I*a*d+a^2*d+c*b^2-d)*(I+a+b*x)^
2/(1+(b*x+a)^2)/(a^2*d+c*b^2+2*(b^2*c*d)^(1/2)+d))*arccot(b*x+a)+1/2*b/d*(b
^2*c*d)^(1/2)/(a^2*d+c*b^2-2*(b^2*c*d)^(1/2)+d)*arccot(b*x+a)^2-b/(a^2*d+c*
b^2-2*(b^2*c*d)^(1/2)+d)*arccot(b*x+a)^2+1/2/b*(b^2*c*d)^(1/2)/c/(a^2*d+c*b
^2-2*(b^2*c*d)^(1/2)+d)*arccot(b*x+a)^2+1/2/b*(b^2*c*d)^(1/2)/c/(a^2*d+c*b^
2-2*(b^2*c*d)^(1/2)+d)*arccot(b*x+a)^2*a^2+1/4*b/d*(b^2*c*d)^(1/2)/(a^2*d+c
*b^2-2*(b^2*c*d)^(1/2)+d)*polylog(2,(-2*I*a*d+a^2*d+c*b^2-d)*(I+a+b*x)^2/(1
+(b*x+a)^2)/(a^2*d+c*b^2-2*(b^2*c*d)^(1/2)+d))-1/2*b/(a^2*d+c*b^2-2*(b^2*c*
d)^(1/2)+d)*polylog(2,(-2*I*a*d+a^2*d+c*b^2-d)*(I+a+b*x)^2/(1+(b*x+a)^2)/(a
^2*d+c*b^2-2*(b^2*c*d)^(1/2)+d))+1/4/b*(b^2*c*d)^(1/2)/c/(a^2*d+c*b^2-2*(b^
2*c*d)^(1/2)+d)*polylog(2,(-2*I*a*d+a^2*d+c*b^2-d)*(I+a+b*x)^2/(1+(b*x+a)^2
)/(a^2*d+c*b^2-2*(b^2*c*d)^(1/2)+d))+1/4/b*(b^2*c*d)^(1/2)/c/(a^2*d+c*b^2-2
*(b^2*c*d)^(1/2)+d)*polylog(2,(-2*I*a*d+a^2*d+c*b^2-d)*(I+a+b*x)^2/(1+(b*x+
a)^2)/(a^2*d+c*b^2-2*(b^2*c*d)^(1/2)+d))*a^2
```

maxima [B] time = 5.98, size = 8519, normalized size = 13.27

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/8*b*(8*arctan(d*x/sqrt(c*d))*arctan((b^2*x + a*b)/b)/b - (4*arctan(sqrt(
d)*x/sqrt(c))*arctan2((2*a*b^2*c*d + (a*b^3*c + (a^3 + a)*b*d + (b^4*c + (a
^2 + 3)*b^2*d)*x)*sqrt(c)*sqrt(d) + (3*b^3*c*d + (a^2 + 1)*b*d^2)*x)/(b^4*c
^2 + 2*(a^2 + 3)*b^2*c*d + (a^4 + 2*a^2 + 1)*d^2 + 4*(b^3*c + (a^2 + 1)*b*d
)*sqrt(c)*sqrt(d)), ((a^2 + 3)*b^2*c*d + (a^4 + 2*a^2 + 1)*d^2 + (2*a*b^2*d
*x + b^3*c + 3*(a^2 + 1)*b*d)*sqrt(c)*sqrt(d) + (a*b^3*c*d + (a^3 + a)*b*d^
2)*x)/(b^4*c^2 + 2*(a^2 + 3)*b^2*c*d + (a^4 + 2*a^2 + 1)*d^2 + 4*(b^3*c + (
a^2 + 1)*b*d)*sqrt(c)*sqrt(d))) + 4*arctan(sqrt(d)*x/sqrt(c))*arctan2((2*a*
b^2*c*d - (a*b^3*c + (a^3 + a)*b*d + (b^4*c + (a^2 + 3)*b^2*d)*x)*sqrt(c)*s
qrt(d) + (3*b^3*c*d + (a^2 + 1)*b*d^2)*x)/(b^4*c^2 + 2*(a^2 + 3)*b^2*c*d +
(a^4 + 2*a^2 + 1)*d^2 - 4*(b^3*c + (a^2 + 1)*b*d)*sqrt(c)*sqrt(d)), ((a^2 +
 3)*b^2*c*d + (a^4 + 2*a^2 + 1)*d^2 - (2*a*b^2*d*x + b^3*c + 3*(a^2 + 1)*b*
d)*sqrt(c)*sqrt(d) + (a*b^3*c*d + (a^3 + a)*b*d^2)*x)/(b^4*c^2 + 2*(a^2 + 3
)*b^2*c*d + (a^4 + 2*a^2 + 1)*d^2 - 4*(b^3*c + (a^2 + 1)*b*d)*sqrt(c)*sqrt(
d))) + log(d*x^2 + c)*log(((a^2 + 1)*b^22*c^11*d + 11*(a^4 + 22*a^2 + 21)*b
^20*c^10*d^2 + 55*(a^6 + 39*a^4 + 171*a^2 + 133)*b^18*c^9*d^3 + 33*(5*a^8 +
 260*a^6 + 1870*a^4 + 3876*a^2 + 2261)*b^16*c^8*d^4 + 330*(a^10 + 61*a^8 +
570*a^6 + 1802*a^4 + 2261*a^2 + 969)*b^14*c^7*d^5 + 22*(21*a^12 + 1386*a^10
 + 15015*a^8 + 60060*a^6 + 109395*a^4 + 92378*a^2 + 29393)*b^12*c^6*d^6 + 2
2*(21*a^14 + 1407*a^12 + 16401*a^10 + 75075*a^8 + 169455*a^6 + 201773*a^4 +
 121771*a^2 + 29393)*b^10*c^5*d^7 + 330*(a^16 + 64*a^14 + 756*a^12 + 3696*a
^10 + 9438*a^8 + 13728*a^6 + 11492*a^4 + 5168*a^2 + 969)*b^8*c^4*d^8 + 33*(
5*a^18 + 285*a^16 + 3220*a^14 + 15876*a^12 + 42966*a^10 + 70070*a^8 + 70980
*a^6 + 43860*a^4 + 15181*a^2 + 2261)*b^6*c^3*d^9 + 55*(a^20 + 46*a^18 + 465
*a^16 + 2184*a^14 + 5922*a^12 + 10164*a^10 + 11466*a^8 + 8520*a^6 + 4029*a^
4 + 1102*a^2 + 133)*b^4*c^2*d^10 + 11*(a^22 + 31*a^20 + 255*a^18 + 1065*a^1
6 + 2730*a^14 + 4662*a^12 + 5502*a^10 + 4530*a^8 + 2565*a^6 + 955*a^4 + 211
*a^2 + 21)*b^2*c*d^11 + (a^24 + 12*a^22 + 66*a^20 + 220*a^18 + 495*a^16 + 7
92*a^14 + 924*a^12 + 792*a^10 + 495*a^8 + 220*a^6 + 66*a^4 + 12*a^2 + 1)*d^
12 + (b^24*c^11*d + 11*(a^2 + 21)*b^22*c^10*d^2 + 55*(a^4 + 38*a^2 + 133)*b
^20*c^9*d^3 + 33*(5*a^6 + 255*a^4 + 1615*a^2 + 2261)*b^18*c^8*d^4 + 330*(a^
8 + 60*a^6 + 510*a^4 + 1292*a^2 + 969)*b^16*c^7*d^5 + 22*(21*a^10 + 1365*a^
8 + 13650*a^6 + 46410*a^4 + 62985*a^2 + 29393)*b^14*c^6*d^6 + 22*(21*a^12 +
 1386*a^10 + 15015*a^8 + 60060*a^6 + 109395*a^4 + 92378*a^2 + 29393)*b^12*c
^5*d^7 + 330*(a^14 + 63*a^12 + 693*a^10 + 3003*a^8 + 6435*a^6 + 7293*a^4 +
4199*a^2 + 969)*b^10*c^4*d^8 + 33*(5*a^16 + 280*a^14 + 2940*a^12 + 12936*a^
10 + 30030*a^8 + 40040*a^6 + 30940*a^4 + 12920*a^2 + 2261)*b^8*c^3*d^9 + 55
*(a^18 + 45*a^16 + 420*a^14 + 1764*a^12 + 4158*a^10 + 6006*a^8 + 5460*a^6 +
 3060*a^4 + 969*a^2 + 133)*b^6*c^2*d^10 + 11*(a^20 + 30*a^18 + 225*a^16 + 8
40*a^14 + 1890*a^12 + 2772*a^10 + 2730*a^8 + 1800*a^6 + 765*a^4 + 190*a^2 +
 21)*b^4*c*d^11 + (a^22 + 11*a^20 + 55*a^18 + 165*a^16 + 330*a^14 + 462*a^1
2 + 462*a^10 + 330*a^8 + 165*a^6 + 55*a^4 + 11*a^2 + 1)*b^2*d^12)*x^2 + 2*(
11*(a^2 + 1)*b^21*c^10*d + 110*(a^4 + 8*a^2 + 7)*b^19*c^9*d^2 + 33*(15*a^6
+ 205*a^4 + 589*a^2 + 399)*b^17*c^8*d^3 + 264*(5*a^8 + 90*a^6 + 408*a^4 + 6
46*a^2 + 323)*b^15*c^7*d^4 + 110*(21*a^10 + 441*a^8 + 2562*a^6 + 6018*a^4 +
 6137*a^2 + 2261)*b^13*c^6*d^5 + 4*(693*a^12 + 15708*a^10 + 105105*a^8 + 30
8880*a^6 + 449735*a^4 + 319124*a^2 + 88179)*b^11*c^5*d^6 + 110*(21*a^14 + 4
83*a^12 + 3465*a^10 + 11583*a^8 + 20735*a^6 + 20553*a^4 + 10659*a^2 + 2261)
*b^9*c^4*d^7 + 264*(5*a^16 + 110*a^14 + 798*a^12 + 2838*a^10 + 5720*a^8 + 6
890*a^6 + 4930*a^4 + 1938*a^2 + 323)*b^7*c^3*d^8 + 33*(15*a^18 + 295*a^16 +
 2044*a^14 + 7308*a^12 + 15554*a^10 + 20930*a^8 + 18060*a^6 + 9724*a^4 + 29
83*a^2 + 399)*b^5*c^2*d^9 + 110*(a^20 + 16*a^18 + 99*a^16 + 336*a^14 + 714*
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a^12 + 1008*a^10 + 966*a^8 + 624*a^6 + 261*a^4 + 64*a^2 + 7)*b^3*c*d^10 + 1
1*(a^22 + 11*a^20 + 55*a^18 + 165*a^16 + 330*a^14 + 462*a^12 + 462*a^10 + 3
30*a^8 + 165*a^6 + 55*a^4 + 11*a^2 + 1)*b*d^11 + (11*b^23*c^10*d + 110*(a^2
 + 7)*b^21*c^9*d^2 + 33*(15*a^4 + 190*a^2 + 399)*b^19*c^8*d^3 + 264*(5*a^6
+ 85*a^4 + 323*a^2 + 323)*b^17*c^7*d^4 + 110*(21*a^8 + 420*a^6 + 2142*a^4 +
 3876*a^2 + 2261)*b^15*c^6*d^5 + 4*(693*a^10 + 15015*a^8 + 90090*a^6 + 2187
90*a^4 + 230945*a^2 + 88179)*b^13*c^5*d^6 + 110*(21*a^12 + 462*a^10 + 3003*
a^8 + 8580*a^6 + 12155*a^4 + 8398*a^2 + 2261)*b^11*c^4*d^7 + 264*(5*a^14 +
105*a^12 + 693*a^10 + 2145*a^8 + 3575*a^6 + 3315*a^4 + 1615*a^2 + 323)*b^9*
c^3*d^8 + 33*(15*a^16 + 280*a^14 + 1764*a^12 + 5544*a^10 + 10010*a^8 + 1092
0*a^6 + 7140*a^4 + 2584*a^2 + 399)*b^7*c^2*d^9 + 110*(a^18 + 15*a^16 + 84*a
^14 + 252*a^12 + 462*a^10 + 546*a^8 + 420*a^6 + 204*a^4 + 57*a^2 + 7)*b^5*c
*d^10 + 11*(a^20 + 10*a^18 + 45*a^16 + 120*a^14 + 210*a^12 + 252*a^10 + 210
*a^8 + 120*a^6 + 45*a^4 + 10*a^2 + 1)*b^3*d^11)*x^2 + 2*(11*a*b^22*c^10*d +
 110*(a^3 + 7*a)*b^20*c^9*d^2 + 33*(15*a^5 + 190*a^3 + 399*a)*b^18*c^8*d^3
+ 264*(5*a^7 + 85*a^5 + 323*a^3 + 323*a)*b^16*c^7*d^4 + 110*(21*a^9 + 420*a
^7 + 2142*a^5 + 3876*a^3 + 2261*a)*b^14*c^6*d^5 + 4*(693*a^11 + 15015*a^9 +
 90090*a^7 + 218790*a^5 + 230945*a^3 + 88179*a)*b^12*c^5*d^6 + 110*(21*a^13
 + 462*a^11 + 3003*a^9 + 8580*a^7 + 12155*a^5 + 8398*a^3 + 2261*a)*b^10*c^4
*d^7 + 264*(5*a^15 + 105*a^13 + 693*a^11 + 2145*a^9 + 3575*a^7 + 3315*a^5 +
 1615*a^3 + 323*a)*b^8*c^3*d^8 + 33*(15*a^17 + 280*a^15 + 1764*a^13 + 5544*
a^11 + 10010*a^9 + 10920*a^7 + 7140*a^5 + 2584*a^3 + 399*a)*b^6*c^2*d^9 + 1
10*(a^19 + 15*a^17 + 84*a^15 + 252*a^13 + 462*a^11 + 546*a^9 + 420*a^7 + 20
4*a^5 + 57*a^3 + 7*a)*b^4*c*d^10 + 11*(a^21 + 10*a^19 + 45*a^17 + 120*a^15
+ 210*a^13 + 252*a^11 + 210*a^9 + 120*a^7 + 45*a^5 + 10*a^3 + a)*b^2*d^11)*
x)*sqrt(c)*sqrt(d) + 2*(a*b^23*c^11*d + 11*(a^3 + 21*a)*b^21*c^10*d^2 + 55*
(a^5 + 38*a^3 + 133*a)*b^19*c^9*d^3 + 33*(5*a^7 + 255*a^5 + 1615*a^3 + 2261
*a)*b^17*c^8*d^4 + 330*(a^9 + 60*a^7 + 510*a^5 + 1292*a^3 + 969*a)*b^15*c^7
*d^5 + 22*(21*a^11 + 1365*a^9 + 13650*a^7 + 46410*a^5 + 62985*a^3 + 29393*a
)*b^13*c^6*d^6 + 22*(21*a^13 + 1386*a^11 + 15015*a^9 + 60060*a^7 + 109395*a
^5 + 92378*a^3 + 29393*a)*b^11*c^5*d^7 + 330*(a^15 + 63*a^13 + 693*a^11 + 3
003*a^9 + 6435*a^7 + 7293*a^5 + 4199*a^3 + 969*a)*b^9*c^4*d^8 + 33*(5*a^17
+ 280*a^15 + 2940*a^13 + 12936*a^11 + 30030*a^9 + 40040*a^7 + 30940*a^5 + 1
2920*a^3 + 2261*a)*b^7*c^3*d^9 + 55*(a^19 + 45*a^17 + 420*a^15 + 1764*a^13
+ 4158*a^11 + 6006*a^9 + 5460*a^7 + 3060*a^5 + 969*a^3 + 133*a)*b^5*c^2*d^1
0 + 11*(a^21 + 30*a^19 + 225*a^17 + 840*a^15 + 1890*a^13 + 2772*a^11 + 2730
*a^9 + 1800*a^7 + 765*a^5 + 190*a^3 + 21*a)*b^3*c*d^11 + (a^23 + 11*a^21 +
55*a^19 + 165*a^17 + 330*a^15 + 462*a^13 + 462*a^11 + 330*a^9 + 165*a^7 + 5
5*a^5 + 11*a^3 + a)*b*d^12)*x)/(b^24*c^12 + 12*(a^2 + 23)*b^22*c^11*d + 66*
(a^4 + 42*a^2 + 161)*b^20*c^10*d^2 + 44*(5*a^6 + 285*a^4 + 1995*a^2 + 3059)
*b^18*c^9*d^3 + 99*(5*a^8 + 340*a^6 + 3230*a^4 + 9044*a^2 + 7429)*b^16*c^8*
d^4 + 264*(3*a^10 + 225*a^8 + 2550*a^6 + 9690*a^4 + 14535*a^2 + 7429)*b^14*
c^7*d^5 + 4*(231*a^12 + 18018*a^10 + 225225*a^8 + 1021020*a^6 + 2078505*a^4
 + 1939938*a^2 + 676039)*b^12*c^6*d^6 + 264*(3*a^14 + 231*a^12 + 3003*a^10
+ 15015*a^8 + 36465*a^6 + 46189*a^4 + 29393*a^2 + 7429)*b^10*c^5*d^7 + 99*(
5*a^16 + 360*a^14 + 4620*a^12 + 24024*a^10 + 64350*a^8 + 97240*a^6 + 83980*
a^4 + 38760*a^2 + 7429)*b^8*c^4*d^8 + 44*(5*a^18 + 315*a^16 + 3780*a^14 + 1
9404*a^12 + 54054*a^10 + 90090*a^8 + 92820*a^6 + 58140*a^4 + 20349*a^2 + 30
59)*b^6*c^3*d^9 + 66*(a^20 + 50*a^18 + 525*a^16 + 2520*a^14 + 6930*a^12 + 1
2012*a^10 + 13650*a^8 + 10200*a^6 + 4845*a^4 + 1330*a^2 + 161)*b^4*c^2*d^10
 + 12*(a^22 + 33*a^20 + 275*a^18 + 1155*a^16 + 2970*a^14 + 5082*a^12 + 6006
*a^10 + 4950*a^8 + 2805*a^6 + 1045*a^4 + 231*a^2 + 23)*b^2*c*d^11 + (a^24 +
 12*a^22 + 66*a^20 + 220*a^18 + 495*a^16 + 792*a^14 + 924*a^12 + 792*a^10 +
 495*a^8 + 220*a^6 + 66*a^4 + 12*a^2 + 1)*d^12 + 8*(3*b^23*c^11 + 11*(3*a^2
 + 23)*b^21*c^10*d + 33*(5*a^4 + 70*a^2 + 161)*b^19*c^9*d^2 + 99*(5*a^6 + 9
5*a^4 + 399*a^2 + 437)*b^17*c^8*d^3 + 22*(45*a^8 + 1020*a^6 + 5814*a^4 + 11
628*a^2 + 7429)*b^15*c^7*d^4 + 6*(231*a^10 + 5775*a^8 + 39270*a^6 + 106590*
a^4 + 124355*a^2 + 52003)*b^13*c^6*d^5 + 6*(231*a^12 + 6006*a^10 + 45045*a^
8 + 145860*a^6 + 230945*a^4 + 176358*a^2 + 52003)*b^11*c^5*d^6 + 22*(45*a^1
```

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4 + 1155*a^12 + 9009*a^10 + 32175*a^8 + 60775*a^6 + 62985*a^4 + 33915*a^2 +
 7429)*b^9*c^4*d^7 + 99*(5*a^16 + 120*a^14 + 924*a^12 + 3432*a^10 + 7150*a^
8 + 8840*a^6 + 6460*a^4 + 2584*a^2 + 437)*b^7*c^3*d^8 + 33*(5*a^18 + 105*a^
16 + 756*a^14 + 2772*a^12 + 6006*a^10 + 8190*a^8 + 7140*a^6 + 3876*a^4 + 11
97*a^2 + 161)*b^5*c^2*d^9 + 11*(3*a^20 + 50*a^18 + 315*a^16 + 1080*a^14 + 2
310*a^12 + 3276*a^10 + 3150*a^8 + 2040*a^6 + 855*a^4 + 210*a^2 + 23)*b^3*c*
d^10 + 3*(a^22 + 11*a^20 + 55*a^18 + 165*a^16 + 330*a^14 + 462*a^12 + 462*a
^10 + 330*a^8 + 165*a^6 + 55*a^4 + 11*a^2 + 1)*b*d^11)*sqrt(c)*sqrt(d))) -
log(d*x^2 + c)*log(((a^2 + 1)*b^22*c^11*d + 11*(a^4 + 22*a^2 + 21)*b^20*c^1
0*d^2 + 55*(a^6 + 39*a^4 + 171*a^2 + 133)*b^18*c^9*d^3 + 33*(5*a^8 + 260*a^
6 + 1870*a^4 + 3876*a^2 + 2261)*b^16*c^8*d^4 + 330*(a^10 + 61*a^8 + 570*a^6
 + 1802*a^4 + 2261*a^2 + 969)*b^14*c^7*d^5 + 22*(21*a^12 + 1386*a^10 + 1501
5*a^8 + 60060*a^6 + 109395*a^4 + 92378*a^2 + 29393)*b^12*c^6*d^6 + 22*(21*a
^14 + 1407*a^12 + 16401*a^10 + 75075*a^8 + 169455*a^6 + 201773*a^4 + 121771
*a^2 + 29393)*b^10*c^5*d^7 + 330*(a^16 + 64*a^14 + 756*a^12 + 3696*a^10 + 9
438*a^8 + 13728*a^6 + 11492*a^4 + 5168*a^2 + 969)*b^8*c^4*d^8 + 33*(5*a^18
+ 285*a^16 + 3220*a^14 + 15876*a^12 + 42966*a^10 + 70070*a^8 + 70980*a^6 +
43860*a^4 + 15181*a^2 + 2261)*b^6*c^3*d^9 + 55*(a^20 + 46*a^18 + 465*a^16 +
 2184*a^14 + 5922*a^12 + 10164*a^10 + 11466*a^8 + 8520*a^6 + 4029*a^4 + 110
2*a^2 + 133)*b^4*c^2*d^10 + 11*(a^22 + 31*a^20 + 255*a^18 + 1065*a^16 + 273
0*a^14 + 4662*a^12 + 5502*a^10 + 4530*a^8 + 2565*a^6 + 955*a^4 + 211*a^2 +
21)*b^2*c*d^11 + (a^24 + 12*a^22 + 66*a^20 + 220*a^18 + 495*a^16 + 792*a^14
 + 924*a^12 + 792*a^10 + 495*a^8 + 220*a^6 + 66*a^4 + 12*a^2 + 1)*d^12 + (b
^24*c^11*d + 11*(a^2 + 21)*b^22*c^10*d^2 + 55*(a^4 + 38*a^2 + 133)*b^20*c^9
*d^3 + 33*(5*a^6 + 255*a^4 + 1615*a^2 + 2261)*b^18*c^8*d^4 + 330*(a^8 + 60*
a^6 + 510*a^4 + 1292*a^2 + 969)*b^16*c^7*d^5 + 22*(21*a^10 + 1365*a^8 + 136
50*a^6 + 46410*a^4 + 62985*a^2 + 29393)*b^14*c^6*d^6 + 22*(21*a^12 + 1386*a
^10 + 15015*a^8 + 60060*a^6 + 109395*a^4 + 92378*a^2 + 29393)*b^12*c^5*d^7
+ 330*(a^14 + 63*a^12 + 693*a^10 + 3003*a^8 + 6435*a^6 + 7293*a^4 + 4199*a^
2 + 969)*b^10*c^4*d^8 + 33*(5*a^16 + 280*a^14 + 2940*a^12 + 12936*a^10 + 30
030*a^8 + 40040*a^6 + 30940*a^4 + 12920*a^2 + 2261)*b^8*c^3*d^9 + 55*(a^18
+ 45*a^16 + 420*a^14 + 1764*a^12 + 4158*a^10 + 6006*a^8 + 5460*a^6 + 3060*a
^4 + 969*a^2 + 133)*b^6*c^2*d^10 + 11*(a^20 + 30*a^18 + 225*a^16 + 840*a^14
 + 1890*a^12 + 2772*a^10 + 2730*a^8 + 1800*a^6 + 765*a^4 + 190*a^2 + 21)*b^
4*c*d^11 + (a^22 + 11*a^20 + 55*a^18 + 165*a^16 + 330*a^14 + 462*a^12 + 462
*a^10 + 330*a^8 + 165*a^6 + 55*a^4 + 11*a^2 + 1)*b^2*d^12)*x^2 - 2*(11*(a^2
 + 1)*b^21*c^10*d + 110*(a^4 + 8*a^2 + 7)*b^19*c^9*d^2 + 33*(15*a^6 + 205*a
^4 + 589*a^2 + 399)*b^17*c^8*d^3 + 264*(5*a^8 + 90*a^6 + 408*a^4 + 646*a^2
+ 323)*b^15*c^7*d^4 + 110*(21*a^10 + 441*a^8 + 2562*a^6 + 6018*a^4 + 6137*a
^2 + 2261)*b^13*c^6*d^5 + 4*(693*a^12 + 15708*a^10 + 105105*a^8 + 308880*a^
6 + 449735*a^4 + 319124*a^2 + 88179)*b^11*c^5*d^6 + 110*(21*a^14 + 483*a^12
 + 3465*a^10 + 11583*a^8 + 20735*a^6 + 20553*a^4 + 10659*a^2 + 2261)*b^9*c^
4*d^7 + 264*(5*a^16 + 110*a^14 + 798*a^12 + 2838*a^10 + 5720*a^8 + 6890*a^6
 + 4930*a^4 + 1938*a^2 + 323)*b^7*c^3*d^8 + 33*(15*a^18 + 295*a^16 + 2044*a
^14 + 7308*a^12 + 15554*a^10 + 20930*a^8 + 18060*a^6 + 9724*a^4 + 2983*a^2
+ 399)*b^5*c^2*d^9 + 110*(a^20 + 16*a^18 + 99*a^16 + 336*a^14 + 714*a^12 +
1008*a^10 + 966*a^8 + 624*a^6 + 261*a^4 + 64*a^2 + 7)*b^3*c*d^10 + 11*(a^22
 + 11*a^20 + 55*a^18 + 165*a^16 + 330*a^14 + 462*a^12 + 462*a^10 + 330*a^8
+ 165*a^6 + 55*a^4 + 11*a^2 + 1)*b*d^11 + (11*b^23*c^10*d + 110*(a^2 + 7)*b
^21*c^9*d^2 + 33*(15*a^4 + 190*a^2 + 399)*b^19*c^8*d^3 + 264*(5*a^6 + 85*a^
4 + 323*a^2 + 323)*b^17*c^7*d^4 + 110*(21*a^8 + 420*a^6 + 2142*a^4 + 3876*a
^2 + 2261)*b^15*c^6*d^5 + 4*(693*a^10 + 15015*a^8 + 90090*a^6 + 218790*a^4
+ 230945*a^2 + 88179)*b^13*c^5*d^6 + 110*(21*a^12 + 462*a^10 + 3003*a^8 + 8
580*a^6 + 12155*a^4 + 8398*a^2 + 2261)*b^11*c^4*d^7 + 264*(5*a^14 + 105*a^1
2 + 693*a^10 + 2145*a^8 + 3575*a^6 + 3315*a^4 + 1615*a^2 + 323)*b^9*c^3*d^8
 + 33*(15*a^16 + 280*a^14 + 1764*a^12 + 5544*a^10 + 10010*a^8 + 10920*a^6 +
 7140*a^4 + 2584*a^2 + 399)*b^7*c^2*d^9 + 110*(a^18 + 15*a^16 + 84*a^14 + 2
52*a^12 + 462*a^10 + 546*a^8 + 420*a^6 + 204*a^4 + 57*a^2 + 7)*b^5*c*d^10 +
 11*(a^20 + 10*a^18 + 45*a^16 + 120*a^14 + 210*a^12 + 252*a^10 + 210*a^8 +
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120*a^6 + 45*a^4 + 10*a^2 + 1)*b^3*d^11)*x^2 + 2*(11*a*b^22*c^10*d + 110*(a
^3 + 7*a)*b^20*c^9*d^2 + 33*(15*a^5 + 190*a^3 + 399*a)*b^18*c^8*d^3 + 264*(
5*a^7 + 85*a^5 + 323*a^3 + 323*a)*b^16*c^7*d^4 + 110*(21*a^9 + 420*a^7 + 21
42*a^5 + 3876*a^3 + 2261*a)*b^14*c^6*d^5 + 4*(693*a^11 + 15015*a^9 + 90090*
a^7 + 218790*a^5 + 230945*a^3 + 88179*a)*b^12*c^5*d^6 + 110*(21*a^13 + 462*
a^11 + 3003*a^9 + 8580*a^7 + 12155*a^5 + 8398*a^3 + 2261*a)*b^10*c^4*d^7 +
264*(5*a^15 + 105*a^13 + 693*a^11 + 2145*a^9 + 3575*a^7 + 3315*a^5 + 1615*a
^3 + 323*a)*b^8*c^3*d^8 + 33*(15*a^17 + 280*a^15 + 1764*a^13 + 5544*a^11 +
10010*a^9 + 10920*a^7 + 7140*a^5 + 2584*a^3 + 399*a)*b^6*c^2*d^9 + 110*(a^1
9 + 15*a^17 + 84*a^15 + 252*a^13 + 462*a^11 + 546*a^9 + 420*a^7 + 204*a^5 +
57*a^3 + 7*a)*b^4*c*d^10 + 11*(a^21 + 10*a^19 + 45*a^17 + 120*a^15 + 210*a
^13 + 252*a^11 + 210*a^9 + 120*a^7 + 45*a^5 + 10*a^3 + a)*b^2*d^11)*x)*sqrt
(c)*sqrt(d) + 2*(a*b^23*c^11*d + 11*(a^3 + 21*a)*b^21*c^10*d^2 + 55*(a^5 +
38*a^3 + 133*a)*b^19*c^9*d^3 + 33*(5*a^7 + 255*a^5 + 1615*a^3 + 2261*a)*b^1
7*c^8*d^4 + 330*(a^9 + 60*a^7 + 510*a^5 + 1292*a^3 + 969*a)*b^15*c^7*d^5 +
22*(21*a^11 + 1365*a^9 + 13650*a^7 + 46410*a^5 + 62985*a^3 + 29393*a)*b^13*
c^6*d^6 + 22*(21*a^13 + 1386*a^11 + 15015*a^9 + 60060*a^7 + 109395*a^5 + 92
378*a^3 + 29393*a)*b^11*c^5*d^7 + 330*(a^15 + 63*a^13 + 693*a^11 + 3003*a^9
+ 6435*a^7 + 7293*a^5 + 4199*a^3 + 969*a)*b^9*c^4*d^8 + 33*(5*a^17 + 280*a
^15 + 2940*a^13 + 12936*a^11 + 30030*a^9 + 40040*a^7 + 30940*a^5 + 12920*a^
3 + 2261*a)*b^7*c^3*d^9 + 55*(a^19 + 45*a^17 + 420*a^15 + 1764*a^13 + 4158*
a^11 + 6006*a^9 + 5460*a^7 + 3060*a^5 + 969*a^3 + 133*a)*b^5*c^2*d^10 + 11*
(a^21 + 30*a^19 + 225*a^17 + 840*a^15 + 1890*a^13 + 2772*a^11 + 2730*a^9 +
1800*a^7 + 765*a^5 + 190*a^3 + 21*a)*b^3*c*d^11 + (a^23 + 11*a^21 + 55*a^19
+ 165*a^17 + 330*a^15 + 462*a^13 + 462*a^11 + 330*a^9 + 165*a^7 + 55*a^5 +
11*a^3 + a)*b*d^12)*x)/(b^24*c^12 + 12*(a^2 + 23)*b^22*c^11*d + 66*(a^4 +
42*a^2 + 161)*b^20*c^10*d^2 + 44*(5*a^6 + 285*a^4 + 1995*a^2 + 3059)*b^18*c
^9*d^3 + 99*(5*a^8 + 340*a^6 + 3230*a^4 + 9044*a^2 + 7429)*b^16*c^8*d^4 + 2
64*(3*a^10 + 225*a^8 + 2550*a^6 + 9690*a^4 + 14535*a^2 + 7429)*b^14*c^7*d^5
+ 4*(231*a^12 + 18018*a^10 + 225225*a^8 + 1021020*a^6 + 2078505*a^4 + 1939
938*a^2 + 676039)*b^12*c^6*d^6 + 264*(3*a^14 + 231*a^12 + 3003*a^10 + 15015
*a^8 + 36465*a^6 + 46189*a^4 + 29393*a^2 + 7429)*b^10*c^5*d^7 + 99*(5*a^16
+ 360*a^14 + 4620*a^12 + 24024*a^10 + 64350*a^8 + 97240*a^6 + 83980*a^4 + 3
8760*a^2 + 7429)*b^8*c^4*d^8 + 44*(5*a^18 + 315*a^16 + 3780*a^14 + 19404*a^
12 + 54054*a^10 + 90090*a^8 + 92820*a^6 + 58140*a^4 + 20349*a^2 + 3059)*b^6
*c^3*d^9 + 66*(a^20 + 50*a^18 + 525*a^16 + 2520*a^14 + 6930*a^12 + 12012*a^
10 + 13650*a^8 + 10200*a^6 + 4845*a^4 + 1330*a^2 + 161)*b^4*c^2*d^10 + 12*(
a^22 + 33*a^20 + 275*a^18 + 1155*a^16 + 2970*a^14 + 5082*a^12 + 6006*a^10 +
4950*a^8 + 2805*a^6 + 1045*a^4 + 231*a^2 + 23)*b^2*c*d^11 + (a^24 + 12*a^2
2 + 66*a^20 + 220*a^18 + 495*a^16 + 792*a^14 + 924*a^12 + 792*a^10 + 495*a^
8 + 220*a^6 + 66*a^4 + 12*a^2 + 1)*d^12 - 8*(3*b^23*c^11 + 11*(3*a^2 + 23)*
b^21*c^10*d + 33*(5*a^4 + 70*a^2 + 161)*b^19*c^9*d^2 + 99*(5*a^6 + 95*a^4 +
399*a^2 + 437)*b^17*c^8*d^3 + 22*(45*a^8 + 1020*a^6 + 5814*a^4 + 11628*a^2
+ 7429)*b^15*c^7*d^4 + 6*(231*a^10 + 5775*a^8 + 39270*a^6 + 106590*a^4 + 1
24355*a^2 + 52003)*b^13*c^6*d^5 + 6*(231*a^12 + 6006*a^10 + 45045*a^8 + 145
860*a^6 + 230945*a^4 + 176358*a^2 + 52003)*b^11*c^5*d^6 + 22*(45*a^14 + 115
5*a^12 + 9009*a^10 + 32175*a^8 + 60775*a^6 + 62985*a^4 + 33915*a^2 + 7429)*
b^9*c^4*d^7 + 99*(5*a^16 + 120*a^14 + 924*a^12 + 3432*a^10 + 7150*a^8 + 884
0*a^6 + 6460*a^4 + 2584*a^2 + 437)*b^7*c^3*d^8 + 33*(5*a^18 + 105*a^16 + 75
6*a^14 + 2772*a^12 + 6006*a^10 + 8190*a^8 + 7140*a^6 + 3876*a^4 + 1197*a^2
+ 161)*b^5*c^2*d^9 + 11*(3*a^20 + 50*a^18 + 315*a^16 + 1080*a^14 + 2310*a^1
2 + 3276*a^10 + 3150*a^8 + 2040*a^6 + 855*a^4 + 210*a^2 + 23)*b^3*c*d^10 +
3*(a^22 + 11*a^20 + 55*a^18 + 165*a^16 + 330*a^14 + 462*a^12 + 462*a^10 + 3
30*a^8 + 165*a^6 + 55*a^4 + 11*a^2 + 1)*b*d^11)*sqrt(c)*sqrt(d))) + 2*dilog
(((a + I)*b*d*x + b^2*c + (I*b^2*x + (-I*a + 1)*b)*sqrt(c)*sqrt(d))/(b^2*c
+ 2*(-I*a + 1)*b*sqrt(c)*sqrt(d) - (a^2 + 2*I*a - 1)*d)) - 2*dilog(((a + I)
*b*d*x + b^2*c - (I*b^2*x + (-I*a + 1)*b)*sqrt(c)*sqrt(d))/(b^2*c - 2*(-I*a
+ 1)*b*sqrt(c)*sqrt(d) - (a^2 + 2*I*a - 1)*d)) - 2*dilog(((a - I)*b*d*x +
b^2*c + (I*b^2*x + (-I*a - 1)*b)*sqrt(c)*sqrt(d))/(b^2*c + 2*(-I*a - 1)*b*s

```
qrt(c)*sqrt(d) - (a^2 - 2*I*a - 1)*d)) + 2*dilog(((a - I)*b*d*x + b^2*c - (
I*b^2*x + (-I*a - 1)*b)*sqrt(c)*sqrt(d))/(b^2*c - 2*(-I*a - 1)*b*sqrt(c)*sq
rt(d) - (a^2 - 2*I*a - 1)*d)))/b)/sqrt(c*d) + arccot(b*x + a)*arctan(d*x/sq
rt(c*d))/sqrt(c*d) + arctan(d*x/sqrt(c*d))*arctan((b^2*x + a*b)/b)/sqrt(c*d
)
```

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

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Timed out
```

3.108 $\int \frac{\cot^{-1}(a+bx)}{c+dx} dx$

Optimal. Leaf size=152

$$\frac{i\mathrm{Li}_2\left(1-\frac{2b(c+dx)}{(bc-ad+id)(1-i(a+bx))}\right)}{2d}+\frac{\cot^{-1}(a+bx)\log\left(\frac{2b(c+dx)}{(1-i(a+bx))(-ad+bc+id)}\right)}{d}-\frac{i\mathrm{Li}_2\left(1-\frac{2}{1-i(a+bx)}\right)}{2d}-\frac{\log\left(\frac{2}{1-i(a+bx)}\right)\cot^{-1}}{d}$$

```
[Out] -arccot(b*x+a)*ln(2/(1-I*(b*x+a)))/d+arccot(b*x+a)*ln(2*b*(d*x+c)/(b*c+I*d-
a*d)/(1-I*(b*x+a)))/d-1/2*I*polylog(2,1-2/(1-I*(b*x+a)))/d+1/2*I*polylog(2,
1-2*b*(d*x+c)/(b*c+I*d-a*d)/(1-I*(b*x+a)))/d
```

Rubi [A] time = 0.14, antiderivative size = 152, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.357, Rules used = {5048, 4857, 2402, 2315, 2447}

$$\frac{i\mathrm{PolyLog}\left(2,1-\frac{2b(c+dx)}{(1-i(a+bx))(-ad+bc+id)}\right)}{2d}-\frac{i\mathrm{PolyLog}\left(2,1-\frac{2}{1-i(a+bx)}\right)}{2d}+\frac{\cot^{-1}(a+bx)\log\left(\frac{2b(c+dx)}{(1-i(a+bx))(-ad+bc+id)}\right)}{d}-\frac{\mathrm{lo}}{}$$

Antiderivative was successfully verified.

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

```
[Out] -((ArcCot[a + b*x]*Log[2/(1 - I*(a + b*x))])/d) + (ArcCot[a + b*x]*Log[(2*b
*(c + d*x))/((b*c + I*d - a*d)*(1 - I*(a + b*x)))])/d - ((I/2)*PolyLog[2, 1
 - 2/(1 - I*(a + b*x))])/d + ((I/2)*PolyLog[2, 1 - (2*b*(c + d*x))/((b*c +
I*d - a*d)*(1 - I*(a + b*x)))])/d
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2402

```
Int[Log[(c_.)/((d_) + (e_.)*(x_))]/((f_) + (g_.)*(x_)^2), x_Symbol] :> -Dis
t[e/g, Subst[Int[Log[2*d*x]/(1 - 2*d*x), x], x, 1/(d + e*x)], x] /; FreeQ[{
c, d, e, f, g}, x] && EqQ[c, 2*d] && EqQ[e^2*f + d^2*g, 0]
```

Rule 2447

```
Int[Log[u_]*(Pq_)^(m_.), x_Symbol] :> With[{C = FullSimplify[(Pq^m*(1 - u))
/D[u, x]]}, Simp[C*PolyLog[2, 1 - u], x] /; FreeQ[C, x]] /; IntegerQ[m] &&
PolyQ[Pq, x] && RationalFunctionQ[u, x] && LeQ[RationalFunctionExponents[u,
 x][[2]], Expon[Pq, x]]
```

Rule 4857

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))/((d_) + (e_.)*(x_)), x_Symbol] :> -S
imp[((a + b*ArcCot[c*x])*Log[2/(1 - I*c*x)])/e, x] + (-Dist[(b*c)/e, Int[Lo
g[2/(1 - I*c*x)]/(1 + c^2*x^2), x], x] + Dist[(b*c)/e, Int[Log[(2*c*(d + e*
x))/((c*d + I*e)*(1 - I*c*x))]/(1 + c^2*x^2), x], x] + Simp[((a + b*ArcCot[
c*x])*Log[(2*c*(d + e*x))/((c*d + I*e)*(1 - I*c*x))])/e, x]) /; FreeQ[{a, b
, c, d, e}, x] && NeQ[c^2*d^2 + e^2, 0]
```

Rule 5048

```
Int[((a_.) + ArcCot[(c_) + (d_.)*(x_)]*(b_.))^(p_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cCot[x])^p, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, p}, x] && IG
```

tQ[p, 0]

Rubi steps

$$\int \frac{\cot^{-1}(a+bx)}{c+dx}\,dx = \frac{\text{Subst}\left(\int \frac{\cot^{-1}(x)}{\frac{bc-ad}{b}+\frac{dx}{b}}\,dx, x, a+bx\right)}{b}$$

$$= -\frac{\cot^{-1}(a+bx)\log\left(\frac{2}{1-i(a+bx)}\right)}{d} + \frac{\cot^{-1}(a+bx)\log\left(\frac{2b(c+dx)}{(bc+id-ad)(1-i(a+bx))}\right)}{d} - \frac{\text{Subst}\left(\int \frac{\log\left(\frac{2}{1-ix}\right.}{1+x^2}\right.}{d}$$

$$= -\frac{\cot^{-1}(a+bx)\log\left(\frac{2}{1-i(a+bx)}\right)}{d} + \frac{\cot^{-1}(a+bx)\log\left(\frac{2b(c+dx)}{(bc+id-ad)(1-i(a+bx))}\right)}{d} + \frac{i\text{Li}_2\left(1-\frac{2b}{(bc+id-a\right.}}{2d}$$

$$= -\frac{\cot^{-1}(a+bx)\log\left(\frac{2}{1-i(a+bx)}\right)}{d} + \frac{\cot^{-1}(a+bx)\log\left(\frac{2b(c+dx)}{(bc+id-ad)(1-i(a+bx))}\right)}{d} - \frac{i\text{Li}_2\left(1-\frac{2}{1-i(a+bx}\right.}{2d}$$

Mathematica [B] time = 0.05, size = 345, normalized size = 2.27

$$\frac{i\text{Li}_2\left(\frac{b\left(\frac{bc-ad}{b}+\frac{d(a+bx)}{b}\right)}{bc-ad-id}\right)}{2d} - \frac{i\text{Li}_2\left(\frac{b\left(\frac{bc-ad}{b}+\frac{d(a+bx)}{b}\right)}{bc-ad+id}\right)}{2d} - \frac{i\log\left(\frac{d(a+bx-i)}{b\left(-\frac{bc-ad}{b}-\frac{id}{b}\right)}\right)\log\left(\frac{bc-ad}{b}+\frac{d(a+bx)}{b}\right)}{2d} + \frac{i\log\left(\frac{a+bx-i}{a+bx}\right)\log\left(\frac{bc-ad}{b}+\frac{d}{}\right.}{2d}$$

Warning: Unable to verify antiderivative.

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

```
[Out] ((-1/2*I)*Log[(d*(-I + a + b*x))/(b*(((-I)*d)/b - (b*c - a*d)/b))]*Log[(b*c
 - a*d)/b + (d*(a + b*x))/b])/d + ((I/2)*Log[(-I + a + b*x)/(a + b*x)]*Log[
(b*c - a*d)/b + (d*(a + b*x))/b])/d + ((I/2)*Log[(d*(I + a + b*x))/(b*((I*d
)/b - (b*c - a*d)/b))]*Log[(b*c - a*d)/b + (d*(a + b*x))/b])/d - ((I/2)*Log
[(I + a + b*x)/(a + b*x)]*Log[(b*c - a*d)/b + (d*(a + b*x))/b])/d + ((I/2)*
PolyLog[2, (b*((b*c - a*d)/b + (d*(a + b*x))/b))/(b*c - I*d - a*d)])/d - ((
I/2)*PolyLog[2, (b*((b*c - a*d)/b + (d*(a + b*x))/b))/(b*c + I*d - a*d)])/d
```

fricas [F] time = 2.52, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\text{arccot}(bx+a)}{dx+c}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integral(arccot(b*x + a)/(d*x + c), x)
```

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

$$\int \frac{\text{arccot}(bx+a)}{dx+c}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate(arccot(b*x + a)/(d*x + c), x)
```

maple [A] time = 0.06, size = 198, normalized size = 1.30

$$\frac{\ln\left(d\left(bx+a\right)-ad+bc\right)\operatorname{arccot}\left(bx+a\right)}{d}-\frac{i\ln\left(d\left(bx+a\right)-ad+bc\right)\ln\left(\frac{id-d(bx+a)}{-ad+bc+id}\right)}{2d}+\frac{i\ln\left(d\left(bx+a\right)-ad+bc\right)\ln}{2d}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] ln(d*(b*x+a)-a*d+b*c)/d*arccot(b*x+a)-1/2*I*ln(d*(b*x+a)-a*d+b*c)/d*ln((I*d
-d*(b*x+a))/(b*c+I*d-a*d))+1/2*I*ln(d*(b*x+a)-a*d+b*c)/d*ln((I*d+d*(b*x+a))
/(I*d+a*d-b*c))-1/2*I/d*dilog((I*d-d*(b*x+a))/(b*c+I*d-a*d))+1/2*I/d*dilog(
(I*d+d*(b*x+a))/(I*d+a*d-b*c))
```

maxima [B] time = 0.55, size = 283, normalized size = 1.86

$$\frac{\operatorname{arccot}\left(bx+a\right)\log\left(dx+c\right)}{d}+\frac{\arctan\left(\frac{b^2x+ab}{b}\right)\log\left(dx+c\right)}{d}+\frac{\arctan\left(\frac{bd^2x+bcd}{b^2c^2-2\,abcd+\left(a^2+1\right)d^2},\frac{b^2c^2-abcd+\left(b^2cd-abd^2\right)x}{b^2c^2-2\,abcd+\left(a^2+1\right)d^2}\right)\log}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] arccot(b*x + a)*log(d*x + c)/d + arctan((b^2*x + a*b)/b)*log(d*x + c)/d + 1
/2*(arctan2((b*d^2*x + b*c*d)/(b^2*c^2 - 2*a*b*c*d + (a^2 + 1)*d^2), (b^2*c
^2 - a*b*c*d + (b^2*c*d - a*b*d^2)*x)/(b^2*c^2 - 2*a*b*c*d + (a^2 + 1)*d^2)
)*log(b^2*x^2 + 2*a*b*x + a^2 + 1) - arctan(b*x + a)*log((b^2*d^2*x^2 + 2*b
^2*c*d*x + b^2*c^2)/(b^2*c^2 - 2*a*b*c*d + (a^2 + 1)*d^2)) + I*dilog((I*b*d
*x + (I*a + 1)*d)/(-I*b*c + (I*a + 1)*d)) - I*dilog((I*b*d*x + (I*a - 1)*d)
/(-I*b*c + (I*a - 1)*d)))/d
```

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

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Timed out
```

3.109 $\int \frac{\cot^{-1}(a+bx)}{c+\frac{d}{x}}\,dx$

Optimal. Leaf size=338

$$-\frac{id\text{Li}_2\left(-\frac{b(d+cx)}{(a+i)c-bd}\right)}{2c^2}+\frac{id\text{Li}_2\left(\frac{b(d+cx)}{-ac+ic+bd}\right)}{2c^2}+\frac{id\log(cx+d)\log\left(\frac{c(-a-bx+i)}{-ac+bd+ic}\right)}{2c^2}-\frac{id\log\left(-\frac{-a-bx+i}{a+bx}\right)\log(cx+d)}{2c^2}-\frac{id\log(cx+$$

```
[Out] 1/2*ln(I-a-b*x)/b/c+1/2*I*(b*x+a)*ln((-I+a+b*x)/(b*x+a))/b/c+1/2*ln(I+a+b*x
)/b/c-1/2*I*(b*x+a)*ln((I+a+b*x)/(b*x+a))/b/c+1/2*I*d*ln(c*(I-a-b*x)/(I*c-a
*c+b*d))*ln(c*x+d)/c^2-1/2*I*d*ln((-I+a+b*x)/(b*x+a))*ln(c*x+d)/c^2-1/2*I*d
*ln(c*(I+a+b*x)/((I+a)*c-b*d))*ln(c*x+d)/c^2+1/2*I*d*ln((I+a+b*x)/(b*x+a))*
ln(c*x+d)/c^2-1/2*I*d*polylog(2,-b*(c*x+d)/((I+a)*c-b*d))/c^2+1/2*I*d*polyl
og(2,b*(c*x+d)/(I*c-a*c+b*d))/c^2
```

Rubi [A] time = 0.50, antiderivative size = 422, normalized size of antiderivative = 1.25, number of steps used = 37, number of rules used = 10, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.625, Rules used = {5052, 2513, 2409, 2389, 2295, 2394, 2393, 2391, 193, 43}

$$-\frac{id\text{PolyLog}\left(2,\frac{c(-a-bx+i)}{bd+(-a+i)c}\right)}{2c^2}+\frac{id\text{PolyLog}\left(2,\frac{c(a+bx+i)}{-bd+(a+i)c}\right)}{2c^2}-\frac{id\left(\log\left(-\frac{-a-bx+i}{a+bx}\right)+\log(a+bx)-\log(a+bx-i)\right)\log(c$$

Warning: Unable to verify antiderivative.

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

```
[Out] ((I/2)*x*(Log[-((I - a - b*x)/(a + b*x))] + Log[a + b*x] - Log[-I + a + b*x
]))/c - ((I/2)*(I - a - b*x)*Log[-I + a + b*x])/(b*c) - ((I/2)*(I + a + b*x
)*Log[I + a + b*x])/(b*c) - ((I/2)*x*(Log[a + b*x] - Log[I + a + b*x] + Log
[(I + a + b*x)/(a + b*x)]))/c - ((I/2)*d*(Log[-((I - a - b*x)/(a + b*x))] +
 Log[a + b*x] - Log[-I + a + b*x])*Log[d + c*x])/c^2 + ((I/2)*d*(Log[a + b*
x] - Log[I + a + b*x] + Log[(I + a + b*x)/(a + b*x)])*Log[d + c*x])/c^2 + (
(I/2)*d*Log[I + a + b*x]*Log[-((b*(d + c*x))/((I + a)*c - b*d))])/c^2 - ((I
/2)*d*Log[-I + a + b*x]*Log[(b*(d + c*x))/((I - a)*c + b*d)])/c^2 - ((I/2)*
d*PolyLog[2, (c*(I - a - b*x))/((I - a)*c + b*d)])/c^2 + ((I/2)*d*PolyLog[2
, (c*(I + a + b*x))/((I + a)*c - b*d)])/c^2
```

Rule 43

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

Rule 193

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Int[x^(n*p)*(b + a/x^n)^p,
x] /; FreeQ[{a, b}, x] && LtQ[n, 0] && IntegerQ[p]
```

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
```

```
, b, c, d, e, n, p}, x]
```

Rule 2391

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

Rule 2393

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

Rule 2394

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

Rule 2409

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_)^(r_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*Log[c*(d + e*x)
^n])^p, (f + g*x^r)^q, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, r}, x] && I
GtQ[p, 0] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[r] && NeQ[r, 1]))
```

Rule 2513

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]*(RFx_.), x_Symbol] :> Dist[p*r, Int[RFx*Log[a + b*x], x], x] + (Dis
t[q*r, Int[RFx*Log[c + d*x], x], x] - Dist[p*r*Log[a + b*x] + q*r*Log[c + d
*x] - Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r], Int[RFx, x], x]) /; FreeQ[{a, b
, c, d, e, f, p, q, r}, x] && RationalFunctionQ[RFx, x] && NeQ[b*c - a*d, 0
] &&  !MatchQ[RFx, (u_.)*(a + b*x)^(m_.)*(c + d*x)^(n_.) /; IntegersQ[m, n]
]
```

Rule 5052

```
Int[ArcCot[(a_) + (b_.)*(x_)]/((c_) + (d_.)*(x_)^(n_.)), x_Symbol] :> Dist[
I/2, Int[Log[(-I + a + b*x)/(a + b*x)]/(c + d*x^n), x], x] - Dist[I/2, Int[
Log[(I + a + b*x)/(a + b*x)]/(c + d*x^n), x], x] /; FreeQ[{a, b, c, d}, x]
&& RationalQ[n]
```

Rubi steps

$$\int \frac{\cot^{-1}(a+bx)}{c+\frac{d}{x}}\,dx = \frac{1}{2}i\int \frac{\log\left(\frac{-i+a+bx}{a+bx}\right)}{c+\frac{d}{x}}\,dx - \frac{1}{2}i\int \frac{\log\left(\frac{i+a+bx}{a+bx}\right)}{c+\frac{d}{x}}\,dx$$

$$= \frac{1}{2}i\int \frac{\log(-i+a+bx)}{c+\frac{d}{x}}\,dx - \frac{1}{2}i\int \frac{\log(i+a+bx)}{c+\frac{d}{x}}\,dx - \frac{1}{2}\left(i\left(-\log(a+bx)+\log(-i+a+\right.\right.$$

$$= \frac{1}{2}i\int\left(\frac{\log(-i+a+bx)}{c} - \frac{d\log(-i+a+bx)}{c(d+cx)}\right)dx - \frac{1}{2}i\int\left(\frac{\log(i+a+bx)}{c} - \frac{d\log(i+a+\right.$$

$$= \frac{i\int\log(-i+a+bx)\,dx}{2c} - \frac{i\int\log(i+a+bx)\,dx}{2c} - \frac{(id)\int\frac{\log(-i+a+bx)}{d+cx}\,dx}{2c} + \frac{(id)\int\frac{\log(i+a+bx)}{d+cx}}{2c}$$

$$= \frac{ix\left(\log\left(-\frac{i-a-bx}{a+bx}\right)+\log(a+bx)-\log(-i+a+bx)\right)}{2c} - \frac{ix\left(\log(a+bx)-\log(i+a+bx)+\right.}{2c}$$

$$= \frac{ix\left(\log\left(-\frac{i-a-bx}{a+bx}\right)+\log(a+bx)-\log(-i+a+bx)\right)}{2c} - \frac{i(i-a-bx)\log(-i+a+bx)}{2bc} - \frac{i(i-}{}$$

$$= \frac{ix\left(\log\left(-\frac{i-a-bx}{a+bx}\right)+\log(a+bx)-\log(-i+a+bx)\right)}{2c} - \frac{i(i-a-bx)\log(-i+a+bx)}{2bc} - \frac{i(i-}{}$$

Mathematica [A] time = 11.12, size = 602, normalized size = 1.78

$$-\frac{\left((a+bx)^2+1\right)\left(abcd\sqrt{\frac{(a^2+1)c^2-2abcd+b^2d^2}{(ac-bd)^2}}\cot^{-1}(a+bx)^2e^{-i\tan^{-1}\left(\frac{c}{ac-bd}\right)} - b^2d^2\sqrt{\frac{(a^2+1)c^2-2abcd+b^2d^2}{(ac-bd)^2}}\cot^{-1}(a+bx)^2\right.}{}$$

Warning: Unable to verify antiderivative.

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

```
[Out] -1/2*((1 + (a + b*x)^2)*(I*b*c*d*Pi*ArcCot[a + b*x] - 2*c^2*(a + b*x)*ArcCo
t[a + b*x] + I*b*c*d*ArcCot[a + b*x]^2 - a*b*c*d*ArcCot[a + b*x]^2 + b^2*d^
2*ArcCot[a + b*x]^2 + (a*b*c*d*Sqrt[((1 + a^2)*c^2 - 2*a*b*c*d + b^2*d^2)/(
a*c - b*d)^2]*ArcCot[a + b*x]^2)/E^(I*ArcTan[c/(a*c - b*d)]) - (b^2*d^2*Sqr
t[((1 + a^2)*c^2 - 2*a*b*c*d + b^2*d^2)/(a*c - b*d)^2]*ArcCot[a + b*x]^2)/E
^(I*ArcTan[c/(a*c - b*d)]) + (2*I)*b*c*d*ArcCot[a + b*x]*ArcTan[c/(a*c - b*
d)] + b*c*d*Pi*Log[1 + E^((-2*I)*ArcCot[a + b*x])] - 2*b*c*d*ArcCot[a + b*x
]*Log[1 - E^((2*I)*ArcCot[a + b*x])] + 2*b*c*d*ArcCot[a + b*x]*Log[1 - E^((
2*I)*(ArcCot[a + b*x] - ArcTan[c/(a*c - b*d)]))] - 2*b*c*d*ArcTan[c/(a*c -
b*d)]*Log[1 - E^((2*I)*(ArcCot[a + b*x] - ArcTan[c/(a*c - b*d)]))] - b*c*d*
Pi*Log[1/Sqrt[1 + (a + b*x)^(-2)]] + 2*c^2*Log[1/((a + b*x)*Sqrt[1 + (a + b
*x)^(-2)])] + 2*b*c*d*ArcTan[c/(a*c - b*d)]*Log[Sin[ArcCot[a + b*x] - ArcTa
n[c/(a*c - b*d)]]] + I*b*c*d*PolyLog[2, E^((2*I)*ArcCot[a + b*x])] - I*b*c*
d*PolyLog[2, E^((2*I)*(ArcCot[a + b*x] - ArcTan[c/(a*c - b*d)]))]))/(b*c^3*
(a + b*x)^2*Sqrt[(1 + a^2 + 2*a*b*x + b^2*x^2)/(a + b*x)^2]*Sqrt[1 + (a + b
*x)^(-2)])
```

fricas [F] time = 1.69, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{x\,\text{arccot}\,(bx+a)}{cx+d}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

$$\int \frac{\operatorname{arccot}(bx+a)}{c+\frac{d}{x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

maple [A] time = 0.07, size = 317, normalized size = 0.94

$$\frac{\operatorname{arccot}(bx+a)\,x}{c}+\frac{\operatorname{arccot}(bx+a)\,a}{bc}-\frac{\operatorname{arccot}(bx+a)\,d\ln(c(bx+a)-ac+bd)}{c^2}+\frac{\ln\left(a^2c^2-2abcd+b^2d^2+2a\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arccot(b*x+a)/(c+1/x*d),x)
[Out] arccot(b*x+a)/c*x+1/b*arccot(b*x+a)/c*a-arccot(b*x+a)*d/c^2*ln(c*(b*x+a)-a*
c+b*d)+1/2/b/c*ln(a^2*c^2-2*a*b*c*d+b^2*d^2+2*a*c*(c*(b*x+a)-a*c+b*d)-2*(c*
(b*x+a)-a*c+b*d)*b*d+(c*(b*x+a)-a*c+b*d)^2+c^2)+1/2*I/c^2*d*ln(c*(b*x+a)-a*
c+b*d)*ln((I*c-c*(b*x+a))/(I*c-a*c+b*d))-1/2*I/c^2*d*ln(c*(b*x+a)-a*c+b*d)*
ln((I*c+c*(b*x+a))/(I*c+a*c-b*d))+1/2*I/c^2*d*dilog((I*c-c*(b*x+a))/(I*c-a*
c+b*d))-1/2*I/c^2*d*dilog((I*c+c*(b*x+a))/(I*c+a*c-b*d))
```

maxima [A] time = 0.55, size = 280, normalized size = 0.83

$$\frac{2\,bcx\arctan(1,bx+a)-bd\arctan(1,bx+a)\log\left(-\frac{b^2c^2x^2+2\,b^2cdx+b^2d^2}{2\,abcd-b^2d^2-(a^2+1)c^2}\right)-2\,ac\arctan(bx+a)+i\,bd\mathrm{Li}_2\left(\frac{bcx+(a}{(a+i)c}\right.}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(b*x+a)/(c+d/x),x, algorithm="maxima")
[Out] 1/2*(2*b*c*x*arctan2(1, b*x + a) - b*d*arctan2(1, b*x + a)*log(-(b^2*c^2*x^
2 + 2*b^2*c*d*x + b^2*d^2)/(2*a*b*c*d - b^2*d^2 - (a^2 + 1)*c^2)) - 2*a*c*a
rctan(b*x + a) + I*b*d*dilog((b*c*x + (a + I)*c)/((a + I)*c - b*d)) - I*b*d
*dilog((b*c*x + (a - I)*c)/((a - I)*c - b*d)) - (b*d*arctan2(-(b*c^2*x + b*
c*d)/(2*a*b*c*d - b^2*d^2 - (a^2 + 1)*c^2), (a*b*c*d - b^2*d^2 + (a*b*c^2 -
 b^2*c*d)*x)/(2*a*b*c*d - b^2*d^2 - (a^2 + 1)*c^2)) - c)*log(b^2*x^2 + 2*a*
b*x + a^2 + 1))/(b*c^2)
```

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

$$\int \frac{\operatorname{acot}(a+b\,x)}{c+\frac{d}{x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Timed out
```

3.110 $\int \frac{\cot^{-1}(a+bx)}{c+\frac{d}{x^2}}\,dx$

Optimal. Leaf size=735

$$-\frac{\sqrt{d}\,\mathrm{Li}_2\left(\frac{b\left(\sqrt{d}-i\sqrt{c}\,x\right)}{\sqrt{c}\,(ia+1)+b\sqrt{d}}\right)}{4c^{3/2}}+\frac{\sqrt{d}\,\mathrm{Li}_2\left(\frac{b\left(\sqrt{d}-i\sqrt{c}\,x\right)}{i\sqrt{c}\,(a+i)+b\sqrt{d}}\right)}{4c^{3/2}}+\frac{\sqrt{d}\,\mathrm{Li}_2\left(-\frac{b\left(i\sqrt{c}\,x+\sqrt{d}\right)}{(ia+1)\sqrt{c}-b\sqrt{d}}\right)}{4c^{3/2}}-\frac{\sqrt{d}\,\mathrm{Li}_2\left(\frac{b\left(i\sqrt{c}\,x+\sqrt{d}\right)}{\sqrt{c}\,(1-ia)+b\sqrt{d}}\right)}{4c^{3/2}}-\frac{\sqrt{d}\,\log\left(1\right.}{}$$

```
[Out] 1/2*ln(I-a-b*x)/b/c+1/2*I*(b*x+a)*ln((-I+a+b*x)/(b*x+a))/b/c+1/2*ln(I+a+b*x
)/b/c-1/2*I*(b*x+a)*ln((I+a+b*x)/(b*x+a))/b/c-1/2*I*arctan(x*c^(1/2)/d^(1/2
))*ln((-I+a+b*x)/(b*x+a))*d^(1/2)/c^(3/2)+1/2*I*arctan(x*c^(1/2)/d^(1/2))*l
n((I+a+b*x)/(b*x+a))*d^(1/2)/c^(3/2)+1/4*ln(1+I*x*c^(1/2)/d^(1/2))*ln((I-a-
b*x)*c^(1/2)/((I-a)*c^(1/2)-I*b*d^(1/2)))*d^(1/2)/c^(3/2)+1/4*ln(1-I*x*c^(1
/2)/d^(1/2))*ln((I+a+b*x)*c^(1/2)/((I+a)*c^(1/2)-I*b*d^(1/2)))*d^(1/2)/c^(3
/2)-1/4*ln(1-I*x*c^(1/2)/d^(1/2))*ln((I-a-b*x)*c^(1/2)/((I-a)*c^(1/2)+I*b*d
^(1/2)))*d^(1/2)/c^(3/2)-1/4*ln(1+I*x*c^(1/2)/d^(1/2))*ln((I+a+b*x)*c^(1/2)
/((I+a)*c^(1/2)+I*b*d^(1/2)))*d^(1/2)/c^(3/2)+1/4*polylog(2,-b*(I*x*c^(1/2)
+d^(1/2))/((1+I*a)*c^(1/2)-b*d^(1/2)))*d^(1/2)/c^(3/2)-1/4*polylog(2,b*(I*x
*c^(1/2)+d^(1/2))/((1-I*a)*c^(1/2)+b*d^(1/2)))*d^(1/2)/c^(3/2)-1/4*polylog(
2,b*(-I*x*c^(1/2)+d^(1/2))/((1+I*a)*c^(1/2)+b*d^(1/2)))*d^(1/2)/c^(3/2)+1/4
*polylog(2,b*(-I*x*c^(1/2)+d^(1/2))/(I*(I+a)*c^(1/2)+b*d^(1/2)))*d^(1/2)/c^
(3/2)
```

Rubi [A] time = 1.52, antiderivative size = 818, normalized size of antiderivative = 1.11, number of steps used = 57, number of rules used = 11, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.688, Rules used = {5052, 2513, 2409, 2389, 2295, 2394, 2393, 2391, 193, 321, 205}

$$\frac{ix\left(\log\left(-\frac{-a-bx+i}{a+bx}\right)+\log(a+bx)-\log(a+bx-i)\right)}{2c}-\frac{i\sqrt{d}\,\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{d}}\right)\left(\log\left(-\frac{-a-bx+i}{a+bx}\right)+\log(a+bx)-\log(a\right.}{2c^{3/2}}$$

Warning: Unable to verify antiderivative.

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

```
[Out] ((I/2)*x*(Log[-((I - a - b*x)/(a + b*x))] + Log[a + b*x] - Log[-I + a + b*x
]))/c - ((I/2)*Sqrt[d]*ArcTan[(Sqrt[c]*x)/Sqrt[d]]*(Log[-((I - a - b*x)/(a
+ b*x))] + Log[a + b*x] - Log[-I + a + b*x]))/c^(3/2) - ((I/2)*(I - a - b*x
)*Log[-I + a + b*x])/(b*c) - ((I/2)*(I + a + b*x)*Log[I + a + b*x])/(b*c) -
 ((I/2)*x*(Log[a + b*x] - Log[I + a + b*x] + Log[(I + a + b*x)/(a + b*x)]))
/c + ((I/2)*Sqrt[d]*ArcTan[(Sqrt[c]*x)/Sqrt[d]]*(Log[a + b*x] - Log[I + a +
 b*x] + Log[(I + a + b*x)/(a + b*x)]))/c^(3/2) - ((I/4)*Sqrt[d]*Log[-I + a
+ b*x]*Log[-((b*(Sqrt[d] - Sqrt[-c]*x))/((I - a)*Sqrt[-c] - b*Sqrt[d]))])/(
-c)^(3/2) + ((I/4)*Sqrt[d]*Log[I + a + b*x]*Log[(b*(Sqrt[d] - Sqrt[-c]*x))/
((I + a)*Sqrt[-c] + b*Sqrt[d])])/(-c)^(3/2) - ((I/4)*Sqrt[d]*Log[I + a + b*
x]*Log[-((b*(Sqrt[d] + Sqrt[-c]*x))/((I + a)*Sqrt[-c] - b*Sqrt[d]))])/(-c)^
(3/2) + ((I/4)*Sqrt[d]*Log[-I + a + b*x]*Log[(b*(Sqrt[d] + Sqrt[-c]*x))/((I
 - a)*Sqrt[-c] + b*Sqrt[d])])/(-c)^(3/2) - ((I/4)*Sqrt[d]*PolyLog[2, (Sqrt[
-c]*(I - a - b*x))/((I - a)*Sqrt[-c] - b*Sqrt[d])])/(-c)^(3/2) + ((I/4)*Sqr
t[d]*PolyLog[2, (Sqrt[-c]*(I - a - b*x))/((I - a)*Sqrt[-c] + b*Sqrt[d])])/(
-c)^(3/2) - ((I/4)*Sqrt[d]*PolyLog[2, (Sqrt[-c]*(I + a + b*x))/((I + a)*Sqr
t[-c] - b*Sqrt[d])])/(-c)^(3/2) + ((I/4)*Sqrt[d]*PolyLog[2, (Sqrt[-c]*(I +
a + b*x))/((I + a)*Sqrt[-c] + b*Sqrt[d])])/(-c)^(3/2)
```

Rule 193

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Int[x^(n*p)*(b + a/x^n)^p,
x] /; FreeQ[{a, b}, x] && LtQ[n, 0] && IntegerQ[p]
```

Rule 205

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

Rule 321

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

Rule 2295

```
Int[Log[(c_.)*(x_)^(n_.)], x_Symbol] :> Simp[x*Log[c*x^n], x] - Simp[n*x, x
] /; FreeQ[{c, n}, x]
```

Rule 2389

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.), x_Symbol] :
> Dist[1/e, Subst[Int[(a + b*Log[c*x^n])^p, x], x, d + e*x], x] /; FreeQ[{a
, b, c, d, e, n, p}, x]
```

Rule 2391

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

Rule 2393

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

Rule 2394

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

Rule 2409

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((f_) + (g_.
)*(x_)^(r_))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*Log[c*(d + e*x)
^n])^p, (f + g*x^r)^q, x], x] /; FreeQ[{a, b, c, d, e, f, g, n, r}, x] && I
GtQ[p, 0] && IntegerQ[q] && (GtQ[q, 0] || (IntegerQ[r] && NeQ[r, 1]))
```

Rule 2513

```
Int[Log[(e_.)*((f_.)*((a_.) + (b_.)*(x_))^(p_.)*((c_.) + (d_.)*(x_))^(q_.))
^(r_.)]*(RFx_.), x_Symbol] :> Dist[p*r, Int[RFx*Log[a + b*x], x], x] + (Dis
t[q*r, Int[RFx*Log[c + d*x], x], x] - Dist[p*r*Log[a + b*x] + q*r*Log[c + d
*x] - Log[e*(f*(a + b*x)^p*(c + d*x)^q)^r], Int[RFx, x], x]) /; FreeQ[{a, b
, c, d, e, f, p, q, r}, x] && RationalFunctionQ[RFx, x] && NeQ[b*c - a*d, 0
] &&  !MatchQ[RFx, (u_.)*(a + b*x)^(m_.)*(c + d*x)^(n_.) /; IntegersQ[m, n]
]
```

Rule 5052

```
Int[ArcCot[(a_) + (b_.)*(x_)]/((c_) + (d_.)*(x_)^(n_.)), x_Symbol] :> Dist[
I/2, Int[Log[(-I + a + b*x)/(a + b*x)]/(c + d*x^n), x], x] - Dist[I/2, Int[
Log[(I + a + b*x)/(a + b*x)]/(c + d*x^n), x], x] /; FreeQ[{a, b, c, d}, x]
&& RationalQ[n]
```

Rubi steps

$$\int \frac{\cot^{-1}(a+bx)}{c+\frac{d}{x^2}}\,dx = \frac{1}{2}i\int \frac{\log\left(\frac{-i+a+bx}{a+bx}\right)}{c+\frac{d}{x^2}}\,dx - \frac{1}{2}i\int \frac{\log\left(\frac{i+a+bx}{a+bx}\right)}{c+\frac{d}{x^2}}\,dx$$

$$= \frac{1}{2}i\int \frac{\log(-i+a+bx)}{c+\frac{d}{x^2}}\,dx - \frac{1}{2}i\int \frac{\log(i+a+bx)}{c+\frac{d}{x^2}}\,dx - \frac{1}{2}\left(i\left(-\log(a+bx)+\log(-i+a\right.\right.$$

$$= \frac{1}{2}i\int\left(\frac{\log(-i+a+bx)}{c} - \frac{d\log(-i+a+bx)}{c\left(d+cx^2\right)}\right)dx - \frac{1}{2}i\int\left(\frac{\log(i+a+bx)}{c} - \frac{d\log(i+\right.$$

$$= \frac{ix\left(\log\left(-\frac{i-a-bx}{a+bx}\right)+\log(a+bx)-\log(-i+a+bx)\right)}{2c} - \frac{ix\left(\log(a+bx)-\log(i+a+bx)\right)}{2c}$$

$$= \frac{ix\left(\log\left(-\frac{i-a-bx}{a+bx}\right)+\log(a+bx)-\log(-i+a+bx)\right)}{2c} - \frac{i\sqrt{d}\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{d}}\right)\left(\log\left(-\frac{i-a-bx}{a+bx}\right)\right.}{2c}$$

$$= \frac{ix\left(\log\left(-\frac{i-a-bx}{a+bx}\right)+\log(a+bx)-\log(-i+a+bx)\right)}{2c} - \frac{i\sqrt{d}\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{d}}\right)\left(\log\left(-\frac{i-a-bx}{a+bx}\right)\right.}{2c}$$

$$= \frac{ix\left(\log\left(-\frac{i-a-bx}{a+bx}\right)+\log(a+bx)-\log(-i+a+bx)\right)}{2c} - \frac{i\sqrt{d}\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{d}}\right)\left(\log\left(-\frac{i-a-bx}{a+bx}\right)\right.}{2c}$$

$$= \frac{ix\left(\log\left(-\frac{i-a-bx}{a+bx}\right)+\log(a+bx)-\log(-i+a+bx)\right)}{2c} - \frac{i\sqrt{d}\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{d}}\right)\left(\log\left(-\frac{i-a-bx}{a+bx}\right)\right.}{2c}$$

$$= \frac{ix\left(\log\left(-\frac{i-a-bx}{a+bx}\right)+\log(a+bx)-\log(-i+a+bx)\right)}{2c} - \frac{i\sqrt{d}\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{d}}\right)\left(\log\left(-\frac{i-a-bx}{a+bx}\right)\right.}{2c}$$

Mathematica [B] time = 36.56, size = 5764, normalized size = 7.84

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[ArcCot[a + b*x]/(c + d/x^2),x]
[Out] Result too large to show
```

fricas [F] time = 0.66, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{x^2\operatorname{arccot}(bx+a)}{cx^2+d}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Timed out
```

maple [C] time = 2.64, size = 52954, normalized size = 72.05

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] result too large to display
```

maxima [B] time = 1.36, size = 8518, normalized size = 11.59

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -(d*arctan(c*x/sqrt(c*d))/(sqrt(c*d)*c) - x/c)*arccot(b*x + a) - 1/8*(8*a*c
*arctan(b*x + a) + (4*b*arctan(sqrt(c)*x/sqrt(d))*arctan2((2*a*b^2*c*d + (a
*b^3*d + (a^3 + a)*b*c + (b^4*d + (a^2 + 3)*b^2*c)*x)*sqrt(c)*sqrt(d) + (3*
b^3*c*d + (a^2 + 1)*b*c^2)*x)/(b^4*d^2 + 2*(a^2 + 3)*b^2*c*d + (a^4 + 2*a^2
 + 1)*c^2 + 4*(b^3*d + (a^2 + 1)*b*c)*sqrt(c)*sqrt(d)), ((a^2 + 3)*b^2*c*d
+ (a^4 + 2*a^2 + 1)*c^2 + (2*a*b^2*c*x + b^3*d + 3*(a^2 + 1)*b*c)*sqrt(c)*s
qrt(d) + (a*b^3*c*d + (a^3 + a)*b*c^2)*x)/(b^4*d^2 + 2*(a^2 + 3)*b^2*c*d +
(a^4 + 2*a^2 + 1)*c^2 + 4*(b^3*d + (a^2 + 1)*b*c)*sqrt(c)*sqrt(d))) + 4*b*a
rctan(sqrt(c)*x/sqrt(d))*arctan2((2*a*b^2*c*d - (a*b^3*d + (a^3 + a)*b*c +
(b^4*d + (a^2 + 3)*b^2*c)*x)*sqrt(c)*sqrt(d) + (3*b^3*c*d + (a^2 + 1)*b*c^2
)*x)/(b^4*d^2 + 2*(a^2 + 3)*b^2*c*d + (a^4 + 2*a^2 + 1)*c^2 - 4*(b^3*d + (a
^2 + 1)*b*c)*sqrt(c)*sqrt(d)), ((a^2 + 3)*b^2*c*d + (a^4 + 2*a^2 + 1)*c^2 -
 (2*a*b^2*c*x + b^3*d + 3*(a^2 + 1)*b*c)*sqrt(c)*sqrt(d) + (a*b^3*c*d + (a^
3 + a)*b*c^2)*x)/(b^4*d^2 + 2*(a^2 + 3)*b^2*c*d + (a^4 + 2*a^2 + 1)*c^2 - 4
*(b^3*d + (a^2 + 1)*b*c)*sqrt(c)*sqrt(d))) + b*log(c*x^2 + d)*log(((a^2 + 1
)*b^22*c*d^11 + 11*(a^4 + 22*a^2 + 21)*b^20*c^2*d^10 + 55*(a^6 + 39*a^4 + 1
71*a^2 + 133)*b^18*c^3*d^9 + 33*(5*a^8 + 260*a^6 + 1870*a^4 + 3876*a^2 + 22
61)*b^16*c^4*d^8 + 330*(a^10 + 61*a^8 + 570*a^6 + 1802*a^4 + 2261*a^2 + 969
)*b^14*c^5*d^7 + 22*(21*a^12 + 1386*a^10 + 15015*a^8 + 60060*a^6 + 109395*a
^4 + 92378*a^2 + 29393)*b^12*c^6*d^6 + 22*(21*a^14 + 1407*a^12 + 16401*a^10
 + 75075*a^8 + 169455*a^6 + 201773*a^4 + 121771*a^2 + 29393)*b^10*c^7*d^5 +
 330*(a^16 + 64*a^14 + 756*a^12 + 3696*a^10 + 9438*a^8 + 13728*a^6 + 11492*
a^4 + 5168*a^2 + 969)*b^8*c^8*d^4 + 33*(5*a^18 + 285*a^16 + 3220*a^14 + 158
76*a^12 + 42966*a^10 + 70070*a^8 + 70980*a^6 + 43860*a^4 + 15181*a^2 + 2261
)*b^6*c^9*d^3 + 55*(a^20 + 46*a^18 + 465*a^16 + 2184*a^14 + 5922*a^12 + 101
64*a^10 + 11466*a^8 + 8520*a^6 + 4029*a^4 + 1102*a^2 + 133)*b^4*c^10*d^2 +
11*(a^22 + 31*a^20 + 255*a^18 + 1065*a^16 + 2730*a^14 + 4662*a^12 + 5502*a^
10 + 4530*a^8 + 2565*a^6 + 955*a^4 + 211*a^2 + 21)*b^2*c^11*d + (a^24 + 12*
a^22 + 66*a^20 + 220*a^18 + 495*a^16 + 792*a^14 + 924*a^12 + 792*a^10 + 495
*a^8 + 220*a^6 + 66*a^4 + 12*a^2 + 1)*c^12 + (b^24*c*d^11 + 11*(a^2 + 21)*b
^22*c^2*d^10 + 55*(a^4 + 38*a^2 + 133)*b^20*c^3*d^9 + 33*(5*a^6 + 255*a^4 +
 1615*a^2 + 2261)*b^18*c^4*d^8 + 330*(a^8 + 60*a^6 + 510*a^4 + 1292*a^2 + 9
```

69)*b^16*c^5*d^7 + 22*(21*a^10 + 1365*a^8 + 13650*a^6 + 46410*a^4 + 62985*a
^2 + 29393)*b^14*c^6*d^6 + 22*(21*a^12 + 1386*a^10 + 15015*a^8 + 60060*a^6
+ 109395*a^4 + 92378*a^2 + 29393)*b^12*c^7*d^5 + 330*(a^14 + 63*a^12 + 693*
a^10 + 3003*a^8 + 6435*a^6 + 7293*a^4 + 4199*a^2 + 969)*b^10*c^8*d^4 + 33*(
5*a^16 + 280*a^14 + 2940*a^12 + 12936*a^10 + 30030*a^8 + 40040*a^6 + 30940*
a^4 + 12920*a^2 + 2261)*b^8*c^9*d^3 + 55*(a^18 + 45*a^16 + 420*a^14 + 1764*
a^12 + 4158*a^10 + 6006*a^8 + 5460*a^6 + 3060*a^4 + 969*a^2 + 133)*b^6*c^10
d^2 + 11(a^20 + 30*a^18 + 225*a^16 + 840*a^14 + 1890*a^12 + 2772*a^10 + 2
730*a^8 + 1800*a^6 + 765*a^4 + 190*a^2 + 21)*b^4*c^11*d + (a^22 + 11*a^20 +
55*a^18 + 165*a^16 + 330*a^14 + 462*a^12 + 462*a^10 + 330*a^8 + 165*a^6 +
55*a^4 + 11*a^2 + 1)*b^2*c^12)*x^2 + 2*(11*(a^2 + 1)*b^21*c*d^10 + 110*(a^4
+ 8*a^2 + 7)*b^19*c^2*d^9 + 33*(15*a^6 + 205*a^4 + 589*a^2 + 399)*b^17*c^3
d^8 + 264(5*a^8 + 90*a^6 + 408*a^4 + 646*a^2 + 323)*b^15*c^4*d^7 + 110*(2
1*a^10 + 441*a^8 + 2562*a^6 + 6018*a^4 + 6137*a^2 + 2261)*b^13*c^5*d^6 + 4*
(693*a^12 + 15708*a^10 + 105105*a^8 + 308880*a^6 + 449735*a^4 + 319124*a^2
+ 88179)*b^11*c^6*d^5 + 110*(21*a^14 + 483*a^12 + 3465*a^10 + 11583*a^8 + 2
0735*a^6 + 20553*a^4 + 10659*a^2 + 2261)*b^9*c^7*d^4 + 264*(5*a^16 + 110*a^
14 + 798*a^12 + 2838*a^10 + 5720*a^8 + 6890*a^6 + 4930*a^4 + 1938*a^2 + 323
)*b^7*c^8*d^3 + 33*(15*a^18 + 295*a^16 + 2044*a^14 + 7308*a^12 + 15554*a^10
+ 20930*a^8 + 18060*a^6 + 9724*a^4 + 2983*a^2 + 399)*b^5*c^9*d^2 + 110*(a^
20 + 16*a^18 + 99*a^16 + 336*a^14 + 714*a^12 + 1008*a^10 + 966*a^8 + 624*a^
6 + 261*a^4 + 64*a^2 + 7)*b^3*c^10*d + 11*(a^22 + 11*a^20 + 55*a^18 + 165*a
^16 + 330*a^14 + 462*a^12 + 462*a^10 + 330*a^8 + 165*a^6 + 55*a^4 + 11*a^2
+ 1)*b*c^11 + (11*b^23*c*d^10 + 110*(a^2 + 7)*b^21*c^2*d^9 + 33*(15*a^4 + 1
90*a^2 + 399)*b^19*c^3*d^8 + 264*(5*a^6 + 85*a^4 + 323*a^2 + 323)*b^17*c^4*
d^7 + 110*(21*a^8 + 420*a^6 + 2142*a^4 + 3876*a^2 + 2261)*b^15*c^5*d^6 + 4*
(693*a^10 + 15015*a^8 + 90090*a^6 + 218790*a^4 + 230945*a^2 + 88179)*b^13*c
^6*d^5 + 110*(21*a^12 + 462*a^10 + 3003*a^8 + 8580*a^6 + 12155*a^4 + 8398*a
^2 + 2261)*b^11*c^7*d^4 + 264*(5*a^14 + 105*a^12 + 693*a^10 + 2145*a^8 + 35
75*a^6 + 3315*a^4 + 1615*a^2 + 323)*b^9*c^8*d^3 + 33*(15*a^16 + 280*a^14 +
1764*a^12 + 5544*a^10 + 10010*a^8 + 10920*a^6 + 7140*a^4 + 2584*a^2 + 399)*
b^7*c^9*d^2 + 110*(a^18 + 15*a^16 + 84*a^14 + 252*a^12 + 462*a^10 + 546*a^8
+ 420*a^6 + 204*a^4 + 57*a^2 + 7)*b^5*c^10*d + 11*(a^20 + 10*a^18 + 45*a^1
6 + 120*a^14 + 210*a^12 + 252*a^10 + 210*a^8 + 120*a^6 + 45*a^4 + 10*a^2 +
1)*b^3*c^11)*x^2 + 2*(11*a*b^22*c*d^10 + 110*(a^3 + 7*a)*b^20*c^2*d^9 + 33*
(15*a^5 + 190*a^3 + 399*a)*b^18*c^3*d^8 + 264*(5*a^7 + 85*a^5 + 323*a^3 + 3
23*a)*b^16*c^4*d^7 + 110*(21*a^9 + 420*a^7 + 2142*a^5 + 3876*a^3 + 2261*a)*
b^14*c^5*d^6 + 4*(693*a^11 + 15015*a^9 + 90090*a^7 + 218790*a^5 + 230945*a^
3 + 88179*a)*b^12*c^6*d^5 + 110*(21*a^13 + 462*a^11 + 3003*a^9 + 8580*a^7 +
12155*a^5 + 8398*a^3 + 2261*a)*b^10*c^7*d^4 + 264*(5*a^15 + 105*a^13 + 693
*a^11 + 2145*a^9 + 3575*a^7 + 3315*a^5 + 1615*a^3 + 323*a)*b^8*c^8*d^3 + 33
*(15*a^17 + 280*a^15 + 1764*a^13 + 5544*a^11 + 10010*a^9 + 10920*a^7 + 7140
*a^5 + 2584*a^3 + 399*a)*b^6*c^9*d^2 + 110*(a^19 + 15*a^17 + 84*a^15 + 252*
a^13 + 462*a^11 + 546*a^9 + 420*a^7 + 204*a^5 + 57*a^3 + 7*a)*b^4*c^10*d +
11*(a^21 + 10*a^19 + 45*a^17 + 120*a^15 + 210*a^13 + 252*a^11 + 210*a^9 + 1
20*a^7 + 45*a^5 + 10*a^3 + a)*b^2*c^11)*x)*sqrt(c)*sqrt(d) + 2*(a*b^23*c*d^
11 + 11*(a^3 + 21*a)*b^21*c^2*d^10 + 55*(a^5 + 38*a^3 + 133*a)*b^19*c^3*d^9
+ 33*(5*a^7 + 255*a^5 + 1615*a^3 + 2261*a)*b^17*c^4*d^8 + 330*(a^9 + 60*a^
7 + 510*a^5 + 1292*a^3 + 969*a)*b^15*c^5*d^7 + 22*(21*a^11 + 1365*a^9 + 136
50*a^7 + 46410*a^5 + 62985*a^3 + 29393*a)*b^13*c^6*d^6 + 22*(21*a^13 + 1386
*a^11 + 15015*a^9 + 60060*a^7 + 109395*a^5 + 92378*a^3 + 29393*a)*b^11*c^7*
d^5 + 330*(a^15 + 63*a^13 + 693*a^11 + 3003*a^9 + 6435*a^7 + 7293*a^5 + 419
9*a^3 + 969*a)*b^9*c^8*d^4 + 33*(5*a^17 + 280*a^15 + 2940*a^13 + 12936*a^11
+ 30030*a^9 + 40040*a^7 + 30940*a^5 + 12920*a^3 + 2261*a)*b^7*c^9*d^3 + 55
*(a^19 + 45*a^17 + 420*a^15 + 1764*a^13 + 4158*a^11 + 6006*a^9 + 5460*a^7 +
3060*a^5 + 969*a^3 + 133*a)*b^5*c^10*d^2 + 11*(a^21 + 30*a^19 + 225*a^17 +
840*a^15 + 1890*a^13 + 2772*a^11 + 2730*a^9 + 1800*a^7 + 765*a^5 + 190*a^3
+ 21*a)*b^3*c^11*d + (a^23 + 11*a^21 + 55*a^19 + 165*a^17 + 330*a^15 + 462
*a^13 + 462*a^11 + 330*a^9 + 165*a^7 + 55*a^5 + 11*a^3 + a)*b*c^12)*x)/(b^2

```
4*d^12 + 12*(a^2 + 23)*b^22*c*d^11 + 66*(a^4 + 42*a^2 + 161)*b^20*c^2*d^10
+ 44*(5*a^6 + 285*a^4 + 1995*a^2 + 3059)*b^18*c^3*d^9 + 99*(5*a^8 + 340*a^6
 + 3230*a^4 + 9044*a^2 + 7429)*b^16*c^4*d^8 + 264*(3*a^10 + 225*a^8 + 2550*
a^6 + 9690*a^4 + 14535*a^2 + 7429)*b^14*c^5*d^7 + 4*(231*a^12 + 18018*a^10
+ 225225*a^8 + 1021020*a^6 + 2078505*a^4 + 1939938*a^2 + 676039)*b^12*c^6*d
^6 + 264*(3*a^14 + 231*a^12 + 3003*a^10 + 15015*a^8 + 36465*a^6 + 46189*a^4
 + 29393*a^2 + 7429)*b^10*c^7*d^5 + 99*(5*a^16 + 360*a^14 + 4620*a^12 + 240
24*a^10 + 64350*a^8 + 97240*a^6 + 83980*a^4 + 38760*a^2 + 7429)*b^8*c^8*d^4
 + 44*(5*a^18 + 315*a^16 + 3780*a^14 + 19404*a^12 + 54054*a^10 + 90090*a^8
+ 92820*a^6 + 58140*a^4 + 20349*a^2 + 3059)*b^6*c^9*d^3 + 66*(a^20 + 50*a^1
8 + 525*a^16 + 2520*a^14 + 6930*a^12 + 12012*a^10 + 13650*a^8 + 10200*a^6 +
 4845*a^4 + 1330*a^2 + 161)*b^4*c^10*d^2 + 12*(a^22 + 33*a^20 + 275*a^18 +
1155*a^16 + 2970*a^14 + 5082*a^12 + 6006*a^10 + 4950*a^8 + 2805*a^6 + 1045*
a^4 + 231*a^2 + 23)*b^2*c^11*d + (a^24 + 12*a^22 + 66*a^20 + 220*a^18 + 495
*a^16 + 792*a^14 + 924*a^12 + 792*a^10 + 495*a^8 + 220*a^6 + 66*a^4 + 12*a^
2 + 1)*c^12 + 8*(3*b^23*d^11 + 11*(3*a^2 + 23)*b^21*c*d^10 + 33*(5*a^4 + 70
*a^2 + 161)*b^19*c^2*d^9 + 99*(5*a^6 + 95*a^4 + 399*a^2 + 437)*b^17*c^3*d^8
 + 22*(45*a^8 + 1020*a^6 + 5814*a^4 + 11628*a^2 + 7429)*b^15*c^4*d^7 + 6*(2
31*a^10 + 5775*a^8 + 39270*a^6 + 106590*a^4 + 124355*a^2 + 52003)*b^13*c^5*
d^6 + 6*(231*a^12 + 6006*a^10 + 45045*a^8 + 145860*a^6 + 230945*a^4 + 17635
8*a^2 + 52003)*b^11*c^6*d^5 + 22*(45*a^14 + 1155*a^12 + 9009*a^10 + 32175*a
^8 + 60775*a^6 + 62985*a^4 + 33915*a^2 + 7429)*b^9*c^7*d^4 + 99*(5*a^16 + 1
20*a^14 + 924*a^12 + 3432*a^10 + 7150*a^8 + 8840*a^6 + 6460*a^4 + 2584*a^2
+ 437)*b^7*c^8*d^3 + 33*(5*a^18 + 105*a^16 + 756*a^14 + 2772*a^12 + 6006*a^
10 + 8190*a^8 + 7140*a^6 + 3876*a^4 + 1197*a^2 + 161)*b^5*c^9*d^2 + 11*(3*a
^20 + 50*a^18 + 315*a^16 + 1080*a^14 + 2310*a^12 + 3276*a^10 + 3150*a^8 + 2
040*a^6 + 855*a^4 + 210*a^2 + 23)*b^3*c^10*d + 3*(a^22 + 11*a^20 + 55*a^18
+ 165*a^16 + 330*a^14 + 462*a^12 + 462*a^10 + 330*a^8 + 165*a^6 + 55*a^4 +
11*a^2 + 1)*b*c^11)*sqrt(c)*sqrt(d))) - b*log(c*x^2 + d)*log(((a^2 + 1)*b^2
2*c*d^11 + 11*(a^4 + 22*a^2 + 21)*b^20*c^2*d^10 + 55*(a^6 + 39*a^4 + 171*a^
2 + 133)*b^18*c^3*d^9 + 33*(5*a^8 + 260*a^6 + 1870*a^4 + 3876*a^2 + 2261)*b
^16*c^4*d^8 + 330*(a^10 + 61*a^8 + 570*a^6 + 1802*a^4 + 2261*a^2 + 969)*b^1
4*c^5*d^7 + 22*(21*a^12 + 1386*a^10 + 15015*a^8 + 60060*a^6 + 109395*a^4 +
92378*a^2 + 29393)*b^12*c^6*d^6 + 22*(21*a^14 + 1407*a^12 + 16401*a^10 + 75
075*a^8 + 169455*a^6 + 201773*a^4 + 121771*a^2 + 29393)*b^10*c^7*d^5 + 330*
(a^16 + 64*a^14 + 756*a^12 + 3696*a^10 + 9438*a^8 + 13728*a^6 + 11492*a^4 +
 5168*a^2 + 969)*b^8*c^8*d^4 + 33*(5*a^18 + 285*a^16 + 3220*a^14 + 15876*a^
12 + 42966*a^10 + 70070*a^8 + 70980*a^6 + 43860*a^4 + 15181*a^2 + 2261)*b^6
*c^9*d^3 + 55*(a^20 + 46*a^18 + 465*a^16 + 2184*a^14 + 5922*a^12 + 10164*a^
10 + 11466*a^8 + 8520*a^6 + 4029*a^4 + 1102*a^2 + 133)*b^4*c^10*d^2 + 11*(a
^22 + 31*a^20 + 255*a^18 + 1065*a^16 + 2730*a^14 + 4662*a^12 + 5502*a^10 +
4530*a^8 + 2565*a^6 + 955*a^4 + 211*a^2 + 21)*b^2*c^11*d + (a^24 + 12*a^22
+ 66*a^20 + 220*a^18 + 495*a^16 + 792*a^14 + 924*a^12 + 792*a^10 + 495*a^8
+ 220*a^6 + 66*a^4 + 12*a^2 + 1)*c^12 + (b^24*c*d^11 + 11*(a^2 + 21)*b^22*c
^2*d^10 + 55*(a^4 + 38*a^2 + 133)*b^20*c^3*d^9 + 33*(5*a^6 + 255*a^4 + 1615
*a^2 + 2261)*b^18*c^4*d^8 + 330*(a^8 + 60*a^6 + 510*a^4 + 1292*a^2 + 969)*b
^16*c^5*d^7 + 22*(21*a^10 + 1365*a^8 + 13650*a^6 + 46410*a^4 + 62985*a^2 +
29393)*b^14*c^6*d^6 + 22*(21*a^12 + 1386*a^10 + 15015*a^8 + 60060*a^6 + 109
395*a^4 + 92378*a^2 + 29393)*b^12*c^7*d^5 + 330*(a^14 + 63*a^12 + 693*a^10
+ 3003*a^8 + 6435*a^6 + 7293*a^4 + 4199*a^2 + 969)*b^10*c^8*d^4 + 33*(5*a^1
6 + 280*a^14 + 2940*a^12 + 12936*a^10 + 30030*a^8 + 40040*a^6 + 30940*a^4 +
 12920*a^2 + 2261)*b^8*c^9*d^3 + 55*(a^18 + 45*a^16 + 420*a^14 + 1764*a^12
+ 4158*a^10 + 6006*a^8 + 5460*a^6 + 3060*a^4 + 969*a^2 + 133)*b^6*c^10*d^2
+ 11*(a^20 + 30*a^18 + 225*a^16 + 840*a^14 + 1890*a^12 + 2772*a^10 + 2730*a
^8 + 1800*a^6 + 765*a^4 + 190*a^2 + 21)*b^4*c^11*d + (a^22 + 11*a^20 + 55*a
^18 + 165*a^16 + 330*a^14 + 462*a^12 + 462*a^10 + 330*a^8 + 165*a^6 + 55*a^
4 + 11*a^2 + 1)*b^2*c^12)*x^2 - 2*(11*(a^2 + 1)*b^21*c*d^10 + 110*(a^4 + 8*
a^2 + 7)*b^19*c^2*d^9 + 33*(15*a^6 + 205*a^4 + 589*a^2 + 399)*b^17*c^3*d^8
+ 264*(5*a^8 + 90*a^6 + 408*a^4 + 646*a^2 + 323)*b^15*c^4*d^7 + 110*(21*a^1
```

0 + 441*a^8 + 2562*a^6 + 6018*a^4 + 6137*a^2 + 2261)*b^13*c^5*d^6 + 4*(693*
a^12 + 15708*a^10 + 105105*a^8 + 308880*a^6 + 449735*a^4 + 319124*a^2 + 881
79)*b^11*c^6*d^5 + 110*(21*a^14 + 483*a^12 + 3465*a^10 + 11583*a^8 + 20735*
a^6 + 20553*a^4 + 10659*a^2 + 2261)*b^9*c^7*d^4 + 264*(5*a^16 + 110*a^14 +
798*a^12 + 2838*a^10 + 5720*a^8 + 6890*a^6 + 4930*a^4 + 1938*a^2 + 323)*b^7
*c^8*d^3 + 33*(15*a^18 + 295*a^16 + 2044*a^14 + 7308*a^12 + 15554*a^10 + 20
930*a^8 + 18060*a^6 + 9724*a^4 + 2983*a^2 + 399)*b^5*c^9*d^2 + 110*(a^20 +
16*a^18 + 99*a^16 + 336*a^14 + 714*a^12 + 1008*a^10 + 966*a^8 + 624*a^6 + 2
61*a^4 + 64*a^2 + 7)*b^3*c^10*d + 11*(a^22 + 11*a^20 + 55*a^18 + 165*a^16 +
330*a^14 + 462*a^12 + 462*a^10 + 330*a^8 + 165*a^6 + 55*a^4 + 11*a^2 + 1)*
b*c^11 + (11*b^23*c*d^10 + 110*(a^2 + 7)*b^21*c^2*d^9 + 33*(15*a^4 + 190*a^
2 + 399)*b^19*c^3*d^8 + 264*(5*a^6 + 85*a^4 + 323*a^2 + 323)*b^17*c^4*d^7 +
110*(21*a^8 + 420*a^6 + 2142*a^4 + 3876*a^2 + 2261)*b^15*c^5*d^6 + 4*(693*
a^10 + 15015*a^8 + 90090*a^6 + 218790*a^4 + 230945*a^2 + 88179)*b^13*c^6*d^
5 + 110*(21*a^12 + 462*a^10 + 3003*a^8 + 8580*a^6 + 12155*a^4 + 8398*a^2 +
2261)*b^11*c^7*d^4 + 264*(5*a^14 + 105*a^12 + 693*a^10 + 2145*a^8 + 3575*a^
6 + 3315*a^4 + 1615*a^2 + 323)*b^9*c^8*d^3 + 33*(15*a^16 + 280*a^14 + 1764*
a^12 + 5544*a^10 + 10010*a^8 + 10920*a^6 + 7140*a^4 + 2584*a^2 + 399)*b^7*c
^9*d^2 + 110*(a^18 + 15*a^16 + 84*a^14 + 252*a^12 + 462*a^10 + 546*a^8 + 42
0*a^6 + 204*a^4 + 57*a^2 + 7)*b^5*c^10*d + 11*(a^20 + 10*a^18 + 45*a^16 + 1
20*a^14 + 210*a^12 + 252*a^10 + 210*a^8 + 120*a^6 + 45*a^4 + 10*a^2 + 1)*b^
3*c^11)*x^2 + 2*(11*a*b^22*c*d^10 + 110*(a^3 + 7*a)*b^20*c^2*d^9 + 33*(15*a
^5 + 190*a^3 + 399*a)*b^18*c^3*d^8 + 264*(5*a^7 + 85*a^5 + 323*a^3 + 323*a)
*b^16*c^4*d^7 + 110*(21*a^9 + 420*a^7 + 2142*a^5 + 3876*a^3 + 2261*a)*b^14*
c^5*d^6 + 4*(693*a^11 + 15015*a^9 + 90090*a^7 + 218790*a^5 + 230945*a^3 + 8
8179*a)*b^12*c^6*d^5 + 110*(21*a^13 + 462*a^11 + 3003*a^9 + 8580*a^7 + 1215
5*a^5 + 8398*a^3 + 2261*a)*b^10*c^7*d^4 + 264*(5*a^15 + 105*a^13 + 693*a^11
+ 2145*a^9 + 3575*a^7 + 3315*a^5 + 1615*a^3 + 323*a)*b^8*c^8*d^3 + 33*(15*
a^17 + 280*a^15 + 1764*a^13 + 5544*a^11 + 10010*a^9 + 10920*a^7 + 7140*a^5
+ 2584*a^3 + 399*a)*b^6*c^9*d^2 + 110*(a^19 + 15*a^17 + 84*a^15 + 252*a^13
+ 462*a^11 + 546*a^9 + 420*a^7 + 204*a^5 + 57*a^3 + 7*a)*b^4*c^10*d + 11*(a
^21 + 10*a^19 + 45*a^17 + 120*a^15 + 210*a^13 + 252*a^11 + 210*a^9 + 120*a^
7 + 45*a^5 + 10*a^3 + a)*b^2*c^11)*x)*sqrt(c)*sqrt(d) + 2*(a*b^23*c*d^11 +
11*(a^3 + 21*a)*b^21*c^2*d^10 + 55*(a^5 + 38*a^3 + 133*a)*b^19*c^3*d^9 + 33
*(5*a^7 + 255*a^5 + 1615*a^3 + 2261*a)*b^17*c^4*d^8 + 330*(a^9 + 60*a^7 + 5
10*a^5 + 1292*a^3 + 969*a)*b^15*c^5*d^7 + 22*(21*a^11 + 1365*a^9 + 13650*a^
7 + 46410*a^5 + 62985*a^3 + 29393*a)*b^13*c^6*d^6 + 22*(21*a^13 + 1386*a^11
+ 15015*a^9 + 60060*a^7 + 109395*a^5 + 92378*a^3 + 29393*a)*b^11*c^7*d^5 +
330*(a^15 + 63*a^13 + 693*a^11 + 3003*a^9 + 6435*a^7 + 7293*a^5 + 4199*a^3
+ 969*a)*b^9*c^8*d^4 + 33*(5*a^17 + 280*a^15 + 2940*a^13 + 12936*a^11 + 30
030*a^9 + 40040*a^7 + 30940*a^5 + 12920*a^3 + 2261*a)*b^7*c^9*d^3 + 55*(a^1
9 + 45*a^17 + 420*a^15 + 1764*a^13 + 4158*a^11 + 6006*a^9 + 5460*a^7 + 3060
*a^5 + 969*a^3 + 133*a)*b^5*c^10*d^2 + 11*(a^21 + 30*a^19 + 225*a^17 + 840*
a^15 + 1890*a^13 + 2772*a^11 + 2730*a^9 + 1800*a^7 + 765*a^5 + 190*a^3 + 21
*a)*b^3*c^11*d + (a^23 + 11*a^21 + 55*a^19 + 165*a^17 + 330*a^15 + 462*a^13
+ 462*a^11 + 330*a^9 + 165*a^7 + 55*a^5 + 11*a^3 + a)*b*c^12)*x)/(b^24*d^1
2 + 12*(a^2 + 23)*b^22*c*d^11 + 66*(a^4 + 42*a^2 + 161)*b^20*c^2*d^10 + 44*
(5*a^6 + 285*a^4 + 1995*a^2 + 3059)*b^18*c^3*d^9 + 99*(5*a^8 + 340*a^6 + 32
30*a^4 + 9044*a^2 + 7429)*b^16*c^4*d^8 + 264*(3*a^10 + 225*a^8 + 2550*a^6 +
9690*a^4 + 14535*a^2 + 7429)*b^14*c^5*d^7 + 4*(231*a^12 + 18018*a^10 + 225
225*a^8 + 1021020*a^6 + 2078505*a^4 + 1939938*a^2 + 676039)*b^12*c^6*d^6 +
264*(3*a^14 + 231*a^12 + 3003*a^10 + 15015*a^8 + 36465*a^6 + 46189*a^4 + 29
393*a^2 + 7429)*b^10*c^7*d^5 + 99*(5*a^16 + 360*a^14 + 4620*a^12 + 24024*a^
10 + 64350*a^8 + 97240*a^6 + 83980*a^4 + 38760*a^2 + 7429)*b^8*c^8*d^4 + 44
*(5*a^18 + 315*a^16 + 3780*a^14 + 19404*a^12 + 54054*a^10 + 90090*a^8 + 928
20*a^6 + 58140*a^4 + 20349*a^2 + 3059)*b^6*c^9*d^3 + 66*(a^20 + 50*a^18 + 5
25*a^16 + 2520*a^14 + 6930*a^12 + 12012*a^10 + 13650*a^8 + 10200*a^6 + 4845
*a^4 + 1330*a^2 + 161)*b^4*c^10*d^2 + 12*(a^22 + 33*a^20 + 275*a^18 + 1155*
a^16 + 2970*a^14 + 5082*a^12 + 6006*a^10 + 4950*a^8 + 2805*a^6 + 1045*a^4 +

```
 231*a^2 + 23)*b^2*c^11*d + (a^24 + 12*a^22 + 66*a^20 + 220*a^18 + 495*a^16
 + 792*a^14 + 924*a^12 + 792*a^10 + 495*a^8 + 220*a^6 + 66*a^4 + 12*a^2 + 1
)*c^12 - 8*(3*b^23*d^11 + 11*(3*a^2 + 23)*b^21*c*d^10 + 33*(5*a^4 + 70*a^2
+ 161)*b^19*c^2*d^9 + 99*(5*a^6 + 95*a^4 + 399*a^2 + 437)*b^17*c^3*d^8 + 22
*(45*a^8 + 1020*a^6 + 5814*a^4 + 11628*a^2 + 7429)*b^15*c^4*d^7 + 6*(231*a^
10 + 5775*a^8 + 39270*a^6 + 106590*a^4 + 124355*a^2 + 52003)*b^13*c^5*d^6 +
 6*(231*a^12 + 6006*a^10 + 45045*a^8 + 145860*a^6 + 230945*a^4 + 176358*a^2
 + 52003)*b^11*c^6*d^5 + 22*(45*a^14 + 1155*a^12 + 9009*a^10 + 32175*a^8 +
60775*a^6 + 62985*a^4 + 33915*a^2 + 7429)*b^9*c^7*d^4 + 99*(5*a^16 + 120*a^
14 + 924*a^12 + 3432*a^10 + 7150*a^8 + 8840*a^6 + 6460*a^4 + 2584*a^2 + 437
)*b^7*c^8*d^3 + 33*(5*a^18 + 105*a^16 + 756*a^14 + 2772*a^12 + 6006*a^10 +
8190*a^8 + 7140*a^6 + 3876*a^4 + 1197*a^2 + 161)*b^5*c^9*d^2 + 11*(3*a^20 +
 50*a^18 + 315*a^16 + 1080*a^14 + 2310*a^12 + 3276*a^10 + 3150*a^8 + 2040*a
^6 + 855*a^4 + 210*a^2 + 23)*b^3*c^10*d + 3*(a^22 + 11*a^20 + 55*a^18 + 165
*a^16 + 330*a^14 + 462*a^12 + 462*a^10 + 330*a^8 + 165*a^6 + 55*a^4 + 11*a^
2 + 1)*b*c^11)*sqrt(c)*sqrt(d))) + 2*b*dilog(((a + I)*b*c*x + b^2*d + (I*b^
2*x + (-I*a + 1)*b)*sqrt(c)*sqrt(d))/(2*(-I*a + 1)*b*sqrt(c)*sqrt(d) + b^2*
d - (a^2 + 2*I*a - 1)*c)) - 2*b*dilog(-((a + I)*b*c*x + b^2*d - (I*b^2*x +
(-I*a + 1)*b)*sqrt(c)*sqrt(d))/(2*(-I*a + 1)*b*sqrt(c)*sqrt(d) - b^2*d + (a
^2 + 2*I*a - 1)*c)) - 2*b*dilog(((a - I)*b*c*x + b^2*d + (I*b^2*x + (-I*a -
 1)*b)*sqrt(c)*sqrt(d))/(2*(-I*a - 1)*b*sqrt(c)*sqrt(d) + b^2*d - (a^2 - 2*
I*a - 1)*c)) + 2*b*dilog(-((a - I)*b*c*x + b^2*d - (I*b^2*x + (-I*a - 1)*b)
*sqrt(c)*sqrt(d))/(2*(-I*a - 1)*b*sqrt(c)*sqrt(d) - b^2*d + (a^2 - 2*I*a -
1)*c)))*sqrt(c)*sqrt(d) - 4*c*log(b^2*x^2 + 2*a*b*x + a^2 + 1))/(b*c^2)
```

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

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

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Timed out
```

3.111 $\int \frac{\cot^{-1}(a+bx)}{c+d\sqrt{x}}\,dx$

Optimal. Leaf size=693

$$-\frac{ic\text{Li}_2\left(\frac{\sqrt{b}\left(c+d\sqrt{x}\right)}{\sqrt{b}c-\sqrt{-a-i}d}\right)}{d^2}-\frac{ic\text{Li}_2\left(\frac{\sqrt{b}\left(c+d\sqrt{x}\right)}{\sqrt{b}c+\sqrt{-a-i}d}\right)}{d^2}+\frac{ic\text{Li}_2\left(\frac{\sqrt{b}\left(c+d\sqrt{x}\right)}{\sqrt{b}c-\sqrt{i-a}d}\right)}{d^2}+\frac{ic\text{Li}_2\left(\frac{\sqrt{b}\left(c+d\sqrt{x}\right)}{\sqrt{b}c+\sqrt{i-a}d}\right)}{d^2}-\frac{ic\log\left(c+d\sqrt{x}\right)\log\left(\frac{d(-\sqrt{\cdots}}{\sqrt{\cdots}}\right.}{d^2}$$

```
[Out] -I*c*ln((-I+a+b*x)/(b*x+a))*ln(c+d*x^(1/2))/d^2+I*c*ln((I+a+b*x)/(b*x+a))*l
n(c+d*x^(1/2))/d^2-I*c*ln(c+d*x^(1/2))*ln(d*((-I-a)^(1/2)-b^(1/2)*x^(1/2))/
(d*(-I-a)^(1/2)+c*b^(1/2)))/d^2+I*c*ln(c+d*x^(1/2))*ln(d*((I-a)^(1/2)-b^(1/
2)*x^(1/2))/(d*(I-a)^(1/2)+c*b^(1/2)))/d^2-I*c*ln(c+d*x^(1/2))*ln(-d*((-I-a
)^(1/2)+b^(1/2)*x^(1/2))/(-d*(-I-a)^(1/2)+c*b^(1/2)))/d^2+I*c*ln(c+d*x^(1/2
))*ln(-d*((I-a)^(1/2)+b^(1/2)*x^(1/2))/(-d*(I-a)^(1/2)+c*b^(1/2)))/d^2-I*c*
polylog(2,b^(1/2)*(c+d*x^(1/2))/(-d*(-I-a)^(1/2)+c*b^(1/2)))/d^2-I*c*polylo
g(2,b^(1/2)*(c+d*x^(1/2))/(d*(-I-a)^(1/2)+c*b^(1/2)))/d^2+I*c*polylog(2,b^(
1/2)*(c+d*x^(1/2))/(-d*(I-a)^(1/2)+c*b^(1/2)))/d^2+I*c*polylog(2,b^(1/2)*(c
+d*x^(1/2))/(d*(I-a)^(1/2)+c*b^(1/2)))/d^2+2*I*arctanh(b^(1/2)*x^(1/2)/(I-a
)^(1/2))*(I-a)^(1/2)/d/b^(1/2)-2*I*arctan(b^(1/2)*x^(1/2)/(I+a)^(1/2))*(I+a
)^(1/2)/d/b^(1/2)+I*ln((-I+a+b*x)/(b*x+a))*x^(1/2)/d-I*ln((I+a+b*x)/(b*x+a)
)*x^(1/2)/d
```

Rubi [A] time = 2.06, antiderivative size = 693, normalized size of antiderivative = 1.00, number of steps used = 55, number of rules used = 16, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.889, Rules used = {5052, 190, 43, 2528, 2523, 12, 481, 205, 208, 2524, 2418, 260, 2416, 2394, 2393, 2391}

$$-\frac{ic\text{PolyLog}\left(2,\frac{\sqrt{b}\left(c+d\sqrt{x}\right)}{\sqrt{b}c-\sqrt{-a-i}d}\right)}{d^2}-\frac{ic\text{PolyLog}\left(2,\frac{\sqrt{b}\left(c+d\sqrt{x}\right)}{\sqrt{b}c+\sqrt{-a-i}d}\right)}{d^2}+\frac{ic\text{PolyLog}\left(2,\frac{\sqrt{b}\left(c+d\sqrt{x}\right)}{\sqrt{b}c-\sqrt{-a+i}d}\right)}{d^2}+\frac{ic\text{PolyLog}\left(2,\frac{\sqrt{b}\left(c+\cdots\right.}{\sqrt{b}c+\cdots}\right.}{d^2}$$

Antiderivative was successfully verified.

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

```
[Out] ((-2*I)*Sqrt[I + a]*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[I + a]])/(Sqrt[b]*d) + ((
2*I)*Sqrt[I - a]*ArcTanh[(Sqrt[b]*Sqrt[x])/Sqrt[I - a]])/(Sqrt[b]*d) - (I*c
*Log[(d*(Sqrt[-I - a] - Sqrt[b]*Sqrt[x]))/(Sqrt[b]*c + Sqrt[-I - a]*d)]*Log
[c + d*Sqrt[x]])/d^2 + (I*c*Log[(d*(Sqrt[I - a] - Sqrt[b]*Sqrt[x]))/(Sqrt[b
]*c + Sqrt[I - a]*d)]*Log[c + d*Sqrt[x]])/d^2 - (I*c*Log[-((d*(Sqrt[-I - a]
 + Sqrt[b]*Sqrt[x]))/(Sqrt[b]*c - Sqrt[-I - a]*d))]*Log[c + d*Sqrt[x]])/d^2
 + (I*c*Log[-((d*(Sqrt[I - a] + Sqrt[b]*Sqrt[x]))/(Sqrt[b]*c - Sqrt[I - a]*
d))]*Log[c + d*Sqrt[x]])/d^2 + (I*Sqrt[x]*Log[-((I - a - b*x)/(a + b*x))])/
d - (I*c*Log[c + d*Sqrt[x]]*Log[-((I - a - b*x)/(a + b*x))])/d^2 - (I*Sqrt[
x]*Log[(I + a + b*x)/(a + b*x)])/d + (I*c*Log[c + d*Sqrt[x]]*Log[(I + a + b
*x)/(a + b*x)])/d^2 - (I*c*PolyLog[2, (Sqrt[b]*(c + d*Sqrt[x]))/(Sqrt[b]*c
- Sqrt[-I - a]*d)])/d^2 - (I*c*PolyLog[2, (Sqrt[b]*(c + d*Sqrt[x]))/(Sqrt[b
]*c + Sqrt[-I - a]*d)])/d^2 + (I*c*PolyLog[2, (Sqrt[b]*(c + d*Sqrt[x]))/(Sq
rt[b]*c - Sqrt[I - a]*d)])/d^2 + (I*c*PolyLog[2, (Sqrt[b]*(c + d*Sqrt[x]))/
(Sqrt[b]*c + Sqrt[I - a]*d)])/d^2
```

Rule 12

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

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
```

```
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 190

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[Int[x^(1/n
- 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b, p}, x] && FractionQ[n] &&
 IntegerQ[1/n]
```

Rule 205

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

Rule 208

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

Rule 260

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

Rule 481

```
Int[((e_.)*(x_))^(m_.)/(((a_) + (b_.)*(x_)^(n_))*((c_) + (d_.)*(x_)^(n_))),
 x_Symbol] :> -Dist[(a*e^n)/(b*c - a*d), Int[(e*x)^(m - n)/(a + b*x^n), x],
 x] + Dist[(c*e^n)/(b*c - a*d), Int[(e*x)^(m - n)/(c + d*x^n), x], x] /; Fr
eeQ[{a, b, c, d, e, m}, x] && NeQ[b*c - a*d, 0] && IGtQ[n, 0] && LeQ[n, m,
2*n - 1]
```

Rule 2391

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

Rule 2393

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

Rule 2394

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

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2418

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

Rule 2523

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a +
 b*Log[c*RFx^p])^n, x] - Dist[b*n*p, Int[SimplifyIntegrand[(x*(a + b*Log[c*
RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, p}, x] && Rat
ionalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2524

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

Rule 2528

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

Rule 5052

```
Int[ArcCot[(a_) + (b_.)*(x_)]/((c_) + (d_.)*(x_)^(n_.)), x_Symbol] :> Dist[
I/2, Int[Log[(-I + a + b*x)/(a + b*x)]/(c + d*x^n), x], x] - Dist[I/2, Int[
Log[(I + a + b*x)/(a + b*x)]/(c + d*x^n), x], x] /; FreeQ[{a, b, c, d}, x]
&& RationalQ[n]
```

Rubi steps

$$\int \frac{\cot^{-1}(a+bx)}{c+d\sqrt{x}}\,dx = \frac{1}{2}i\int \frac{\log\left(\frac{-i+a+bx}{a+bx}\right)}{c+d\sqrt{x}}\,dx - \frac{1}{2}i\int \frac{\log\left(\frac{i+a+bx}{a+bx}\right)}{c+d\sqrt{x}}\,dx$$

$$= i\,\text{Subst}\left(\int \frac{x\log\left(\frac{-i+a+bx^2}{a+bx^2}\right)}{c+dx}\,dx, x, \sqrt{x}\right) - i\,\text{Subst}\left(\int \frac{x\log\left(\frac{i+a+bx^2}{a+bx^2}\right)}{c+dx}\,dx, x, \sqrt{x}\right)$$

$$= i\,\text{Subst}\left(\int \left(\frac{\log\left(\frac{-i+a+bx^2}{a+bx^2}\right)}{d} - \frac{c\log\left(\frac{-i+a+bx^2}{a+bx^2}\right)}{d(c+dx)}\right)dx, x, \sqrt{x}\right) - i\,\text{Subst}\left(\int \left(\frac{\log\left(\frac{i+a+bx^2}{a+bx^2}\right)}{d} - \cdots\right.\right.$$

$$= \frac{i\,\text{Subst}\left(\int \log\left(\frac{-i+a+bx^2}{a+bx^2}\right)dx, x, \sqrt{x}\right)}{d} - \frac{i\,\text{Subst}\left(\int \log\left(\frac{i+a+bx^2}{a+bx^2}\right)dx, x, \sqrt{x}\right)}{d} - \frac{(ic)\,\text{Subst}\left(\int \cdots\right.}{\cdots}$$

$$= \frac{i\sqrt{x}\log\left(-\frac{i-a-bx}{a+bx}\right)}{d} - \frac{ic\log\left(c+d\sqrt{x}\right)\log\left(-\frac{i-a-bx}{a+bx}\right)}{d^2} - \frac{i\sqrt{x}\log\left(\frac{i+a+bx}{a+bx}\right)}{d} + \frac{ic\log\left(c+d\sqrt{x}\cdots\right.}{d^2}$$

$$= \frac{i\sqrt{x}\log\left(-\frac{i-a-bx}{a+bx}\right)}{d} - \frac{ic\log\left(c+d\sqrt{x}\right)\log\left(-\frac{i-a-bx}{a+bx}\right)}{d^2} - \frac{i\sqrt{x}\log\left(\frac{i+a+bx}{a+bx}\right)}{d} + \frac{ic\log\left(c+d\sqrt{x}\cdots\right.}{d^2}$$

$$= \frac{i\sqrt{x}\log\left(-\frac{i-a-bx}{a+bx}\right)}{d} - \frac{ic\log\left(c+d\sqrt{x}\right)\log\left(-\frac{i-a-bx}{a+bx}\right)}{d^2} - \frac{i\sqrt{x}\log\left(\frac{i+a+bx}{a+bx}\right)}{d} + \frac{ic\log\left(c+d\sqrt{x}\cdots\right.}{d^2}$$

$$= -\frac{2i\sqrt{i+a}\,\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{i+a}}\right)}{\sqrt{b}\,d} + \frac{2i\sqrt{i-a}\,\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{i-a}}\right)}{\sqrt{b}\,d} + \frac{i\sqrt{x}\log\left(-\frac{i-a-bx}{a+bx}\right)}{d} - \frac{ic\log\left(c+d\cdots\right.}{\cdots}$$

$$= -\frac{2i\sqrt{i+a}\,\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{i+a}}\right)}{\sqrt{b}\,d} + \frac{2i\sqrt{i-a}\,\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{i-a}}\right)}{\sqrt{b}\,d} + \frac{i\sqrt{x}\log\left(-\frac{i-a-bx}{a+bx}\right)}{d} - \frac{ic\log\left(c+d\cdots\right.}{\cdots}$$

$$= -\frac{2i\sqrt{i+a}\,\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{i+a}}\right)}{\sqrt{b}\,d} + \frac{2i\sqrt{i-a}\,\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{i-a}}\right)}{\sqrt{b}\,d} - \frac{ic\log\left(\frac{d\left(\sqrt{-i-a}-\sqrt{b}\sqrt{x}\right)}{\sqrt{b}\,c+\sqrt{-i-a}\,d}\right)\log\left(c+d\cdots\right.}{d^2}$$

$$= -\frac{2i\sqrt{i+a}\,\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{i+a}}\right)}{\sqrt{b}\,d} + \frac{2i\sqrt{i-a}\,\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{i-a}}\right)}{\sqrt{b}\,d} - \frac{ic\log\left(\frac{d\left(\sqrt{-i-a}-\sqrt{b}\sqrt{x}\right)}{\sqrt{b}\,c+\sqrt{-i-a}\,d}\right)\log\left(c+d\cdots\right.}{d^2}$$

$$= -\frac{2i\sqrt{i+a}\,\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{i+a}}\right)}{\sqrt{b}\,d} + \frac{2i\sqrt{i-a}\,\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{i-a}}\right)}{\sqrt{b}\,d} - \frac{ic\log\left(\frac{d\left(\sqrt{-i-a}-\sqrt{b}\sqrt{x}\right)}{\sqrt{b}\,c+\sqrt{-i-a}\,d}\right)\log\left(c+d\cdots\right.}{d^2}$$

Mathematica [A] time = 0.81, size = 618, normalized size = 0.89

$$-\frac{i\left(c\text{Li}_2\left(\frac{\sqrt{b}\left(c+d\sqrt{x}\right)}{\sqrt{b}\,c-\sqrt{-a-i}\,d}\right) + c\text{Li}_2\left(\frac{\sqrt{b}\left(c+d\sqrt{x}\right)}{\sqrt{b}\,c+\sqrt{-a-i}\,d}\right) - c\text{Li}_2\left(\frac{\sqrt{b}\left(c+d\sqrt{x}\right)}{\sqrt{b}\,c-\sqrt{i-a}\,d}\right) - c\text{Li}_2\left(\frac{\sqrt{b}\left(c+d\sqrt{x}\right)}{\sqrt{b}\,c+\sqrt{i-a}\,d}\right) + c\log\left(c+d\sqrt{x}\right)\log\left(\frac{d\left(-\sqrt{b}\cdots\right.}{\sqrt{b}\,c\cdots}\right.\cdots\right.}{\cdots}$$

Antiderivative was successfully verified.

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

```
[Out] ((-I)*((2*Sqrt[I + a]*d*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[I + a]])/Sqrt[b] - (2
*Sqrt[I - a]*d*ArcTanh[(Sqrt[b]*Sqrt[x])/Sqrt[I - a]])/Sqrt[b] + c*Log[(d*(
Sqrt[-I - a] - Sqrt[b]*Sqrt[x]))/(Sqrt[b]*c + Sqrt[-I - a]*d)]*Log[c + d*Sq
rt[x]] - c*Log[(d*(Sqrt[I - a] - Sqrt[b]*Sqrt[x]))/(Sqrt[b]*c + Sqrt[I - a]
*d)]*Log[c + d*Sqrt[x]] + c*Log[(d*(Sqrt[-I - a] + Sqrt[b]*Sqrt[x]))/(-(Sqr
t[b]*c) + Sqrt[-I - a]*d)]*Log[c + d*Sqrt[x]] - c*Log[(d*(Sqrt[I - a] + Sqr
t[b]*Sqrt[x]))/(-(Sqrt[b]*c) + Sqrt[I - a]*d)]*Log[c + d*Sqrt[x]] - d*Sqrt[
x]*Log[(-I + a + b*x)/(a + b*x)] + c*Log[c + d*Sqrt[x]]*Log[(-I + a + b*x)/
(a + b*x)] + d*Sqrt[x]*Log[(I + a + b*x)/(a + b*x)] - c*Log[c + d*Sqrt[x]]*
Log[(I + a + b*x)/(a + b*x)] + c*PolyLog[2, (Sqrt[b]*(c + d*Sqrt[x]))/(Sqrt
[b]*c - Sqrt[-I - a]*d)] + c*PolyLog[2, (Sqrt[b]*(c + d*Sqrt[x]))/(Sqrt[b]*
c + Sqrt[-I - a]*d)] - c*PolyLog[2, (Sqrt[b]*(c + d*Sqrt[x]))/(Sqrt[b]*c -
Sqrt[I - a]*d)] - c*PolyLog[2, (Sqrt[b]*(c + d*Sqrt[x]))/(Sqrt[b]*c + Sqrt[
I - a]*d)]))/d^2
```

fricas [F] time = 0.56, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{d\sqrt{x}\,\operatorname{arccot}(bx+a)-c\operatorname{arccot}(bx+a)}{d^2x-c^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(b*x+a)/(c+d*x^(1/2)),x, algorithm="fricas")
```

```
[Out] integral((d*sqrt(x)*arccot(b*x + a) - c*arccot(b*x + a))/(d^2*x - c^2), x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(b*x+a)/(c+d*x^(1/2)),x, algorithm="giac")
```

```
[Out] Timed out
```

maple [C] time = 0.29, size = 343, normalized size = 0.49

$$\frac{2\operatorname{arccot}(bx+a)\sqrt{x}}{d}-\frac{2\operatorname{arccot}(bx+a)\,c\ln\left(c+d\sqrt{x}\right)}{d^2}-c\left(\sum_{\_R1=\operatorname{RootOf}\left(b^2\_Z^4-4c\,b^2\_Z^3+\left(2ab\,d^2+6b^2c^2\right)\_Z^2+\left(-4abc\,d^2-4b^2\right.\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arccot(b*x+a)/(c+d*x^(1/2)),x)
```

```
[Out] 2*arccot(b*x+a)/d*x^(1/2)-2*arccot(b*x+a)*c/d^2*ln(c+d*x^(1/2))-c*sum(1/(_R
1^2*b-2*_R1*b*c+a*d^2+b*c^2)*(ln(c+d*x^(1/2))*ln((-d*x^(1/2)+_R1-c)/_R1)+di
log((-d*x^(1/2)+_R1-c)/_R1)),_R1=RootOf(b^2*_Z^4-4*c*b^2*_Z^3+(2*a*b*d^2+6*
b^2*c^2)*_Z^2+(-4*a*b*c*d^2-4*b^2*c^3)*_Z+a^2*d^4+2*a*b*c^2*d^2+b^2*c^4+d^4
))+sum((_R^2-2*_R*c+c^2)/(_R^3*b-3*_R^2*b*c+_R*a*d^2+3*_R*b*c^2-a*c*d^2-b*c
^3)*ln(d*x^(1/2)-_R+c),_R=RootOf(b^2*_Z^4-4*c*b^2*_Z^3+(2*a*b*d^2+6*b^2*c^2
)*_Z^2+(-4*a*b*c*d^2-4*b^2*c^3)*_Z+a^2*d^4+2*a*b*c^2*d^2+b^2*c^4+d^4))
```

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

$$\int \frac{\operatorname{arccot}(bx+a)}{d\sqrt{x}+c}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(b*x+a)/(c+d*x^(1/2)),x, algorithm="maxima")
```

```
[Out] integrate(arccot(b*x + a)/(d*sqrt(x) + c), x)
```

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

$$\int \frac{\operatorname{acot}(a+bx)}{c+d\sqrt{x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(acot(a + b*x)/(c + d*x^(1/2)),x)
```

```
[Out] int(acot(a + b*x)/(c + d*x^(1/2)), x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(acot(b*x+a)/(c+d*x**(1/2)),x)
```

```
[Out] Timed out
```

3.112 $\int \frac{\cot^{-1}(a+bx)}{c+\frac{d}{\sqrt{x}}}\,dx$

Optimal. Leaf size=830

$$\frac{i\log\left(\frac{c\left(\sqrt{-a-i}-\sqrt{b}\sqrt{x}\right)}{\sqrt{-a-i}c+\sqrt{b}d}\right)\log\left(\sqrt{x}c+d\right)d^2}{c^3}-\frac{i\log\left(\frac{c\left(\sqrt{i-a}-\sqrt{b}\sqrt{x}\right)}{\sqrt{i-a}c+\sqrt{b}d}\right)\log\left(\sqrt{x}c+d\right)d^2}{c^3}+\frac{i\log\left(\frac{c\left(\sqrt{-a-i}+\sqrt{b}\sqrt{x}\right)}{\sqrt{-a-i}c-\sqrt{b}d}\right)\log\left(\cdot\right.}{c^3}$$

```
[Out] 1/2*(1+I*a)*ln(I-a-b*x)/b/c+I*d^2*polylog(2,-b^(1/2)*(d+c*x^(1/2))/(c*(-I-a
)^(1/2)-d*b^(1/2)))/c^3+1/2*(1-I*a)*ln(I+a+b*x)/b/c+2*I*d*arctan(b^(1/2)*x^
(1/2)/(I+a)^(1/2))*(I+a)^(1/2)/c^2/b^(1/2)-1/2*I*x*ln((I+a+b*x)/(b*x+a))/c+
I*d^2*polylog(2,b^(1/2)*(d+c*x^(1/2))/(c*(-I-a)^(1/2)+d*b^(1/2)))/c^3-I*d^2
*ln(d+c*x^(1/2))*ln(c*((I-a)^(1/2)-b^(1/2)*x^(1/2))/(c*(I-a)^(1/2)+d*b^(1/2
)))/c^3-I*d^2*ln(d+c*x^(1/2))*ln(c*((I-a)^(1/2)+b^(1/2)*x^(1/2))/(c*(I-a)^(
1/2)-d*b^(1/2)))/c^3+I*d^2*ln((-I+a+b*x)/(b*x+a))*ln(d+c*x^(1/2))/c^3+I*d*l
n((I+a+b*x)/(b*x+a))*x^(1/2)/c^2-I*d^2*polylog(2,-b^(1/2)*(d+c*x^(1/2))/(c*
(I-a)^(1/2)-d*b^(1/2)))/c^3+1/2*I*x*ln((-I+a+b*x)/(b*x+a))/c-I*d^2*polylog(
2,b^(1/2)*(d+c*x^(1/2))/(c*(I-a)^(1/2)+d*b^(1/2)))/c^3-I*d*ln((-I+a+b*x)/(b
*x+a))*x^(1/2)/c^2+I*d^2*ln(d+c*x^(1/2))*ln(c*((-I-a)^(1/2)-b^(1/2)*x^(1/2)
)/(c*(-I-a)^(1/2)+d*b^(1/2)))/c^3+I*d^2*ln(d+c*x^(1/2))*ln(c*((-I-a)^(1/2)+
b^(1/2)*x^(1/2))/(c*(-I-a)^(1/2)-d*b^(1/2)))/c^3-2*I*d*arctanh(b^(1/2)*x^(1
/2)/(I-a)^(1/2))*(I-a)^(1/2)/c^2/b^(1/2)-I*d^2*ln((I+a+b*x)/(b*x+a))*ln(d+c
*x^(1/2))/c^3
```

Rubi [A] time = 2.32, antiderivative size = 830, normalized size of antiderivative = 1.00, number of steps used = 65, number of rules used = 19, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 1.056, Rules used = {5052, 190, 44, 2528, 2523, 12, 481, 205, 208, 2525, 446, 72, 2524, 2418, 260, 2416, 2394, 2393, 2391}

$$\frac{i\log\left(\frac{c\left(\sqrt{-a-i}-\sqrt{b}\sqrt{x}\right)}{\sqrt{-a-i}c+\sqrt{b}d}\right)\log\left(\sqrt{x}c+d\right)d^2}{c^3}-\frac{i\log\left(\frac{c\left(\sqrt{i-a}-\sqrt{b}\sqrt{x}\right)}{\sqrt{i-a}c+\sqrt{b}d}\right)\log\left(\sqrt{x}c+d\right)d^2}{c^3}+\frac{i\log\left(\frac{c\left(\sqrt{-a-i}+\sqrt{b}\sqrt{x}\right)}{\sqrt{-a-i}c-\sqrt{b}d}\right)\log\left(\cdot\right.}{c^3}$$

Antiderivative was successfully verified.

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

```
[Out] ((2*I)*Sqrt[I + a]*d*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[I + a]])/(Sqrt[b]*c^2) -
 ((2*I)*Sqrt[I - a]*d*ArcTanh[(Sqrt[b]*Sqrt[x])/Sqrt[I - a]])/(Sqrt[b]*c^2)
 + (I*d^2*Log[(c*(Sqrt[-I - a] - Sqrt[b]*Sqrt[x]))/(Sqrt[-I - a]*c + Sqrt[b
]*d)]*Log[d + c*Sqrt[x]])/c^3 - (I*d^2*Log[(c*(Sqrt[I - a] - Sqrt[b]*Sqrt[x
]))/(Sqrt[I - a]*c + Sqrt[b]*d)]*Log[d + c*Sqrt[x]])/c^3 + (I*d^2*Log[(c*(S
qrt[-I - a] + Sqrt[b]*Sqrt[x]))/(Sqrt[-I - a]*c - Sqrt[b]*d)]*Log[d + c*Sqr
t[x]])/c^3 - (I*d^2*Log[(c*(Sqrt[I - a] + Sqrt[b]*Sqrt[x]))/(Sqrt[I - a]*c
- Sqrt[b]*d)]*Log[d + c*Sqrt[x]])/c^3 + ((1 + I*a)*Log[I - a - b*x])/(2*b*c
) - (I*d*Sqrt[x]*Log[-((I - a - b*x)/(a + b*x))])/c^2 + ((I/2)*x*Log[-((I -
 a - b*x)/(a + b*x))])/c + (I*d^2*Log[d + c*Sqrt[x]]*Log[-((I - a - b*x)/(a
 + b*x))])/c^3 + ((1 - I*a)*Log[I + a + b*x])/(2*b*c) + (I*d*Sqrt[x]*Log[(I
 + a + b*x)/(a + b*x)])/c^2 - ((I/2)*x*Log[(I + a + b*x)/(a + b*x)])/c - (I
*d^2*Log[d + c*Sqrt[x]]*Log[(I + a + b*x)/(a + b*x)])/c^3 + (I*d^2*PolyLog[
2, -((Sqrt[b]*(d + c*Sqrt[x]))/(Sqrt[-I - a]*c - Sqrt[b]*d))])/c^3 - (I*d^2
*PolyLog[2, -((Sqrt[b]*(d + c*Sqrt[x]))/(Sqrt[I - a]*c - Sqrt[b]*d))])/c^3
+ (I*d^2*PolyLog[2, (Sqrt[b]*(d + c*Sqrt[x]))/(Sqrt[-I - a]*c + Sqrt[b]*d)]
)/c^3 - (I*d^2*PolyLog[2, (Sqrt[b]*(d + c*Sqrt[x]))/(Sqrt[I - a]*c + Sqrt[b
]*d)])/c^3
```

Rule 12

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

Rule 44

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

Rule 72

```
Int[((e_.) + (f_.)*(x_))^(p_.)/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))),
 x_Symbol] :> Int[ExpandIntegrand[(e + f*x)^p/((a + b*x)*(c + d*x)), x], x]
 /; FreeQ[{a, b, c, d, e, f}, x] && IntegerQ[p]
```

Rule 190

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[Int[x^(1/n
- 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b, p}, x] && FractionQ[n] &&
 IntegerQ[1/n]
```

Rule 205

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

Rule 208

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

Rule 260

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

Rule 446

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_.)*((c_) + (d_.)*(x_)^(n_))^(q_.
), x_Symbol] :> Dist[1/n, Subst[Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p
*(c + d*x)^q, x], x, x^n], x] /; FreeQ[{a, b, c, d, m, n, p, q}, x] && NeQ[
b*c - a*d, 0] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 481

```
Int[((e_.)*(x_))^(m_.)/(((a_) + (b_.)*(x_)^(n_))*((c_) + (d_.)*(x_)^(n_))),
 x_Symbol] :> -Dist[(a*e^n)/(b*c - a*d), Int[(e*x)^(m - n)/(a + b*x^n), x],
 x] + Dist[(c*e^n)/(b*c - a*d), Int[(e*x)^(m - n)/(c + d*x^n), x], x] /; Fr
eeQ[{a, b, c, d, e, m}, x] && NeQ[b*c - a*d, 0] && IGtQ[n, 0] && LeQ[n, m,
2*n - 1]
```

Rule 2391

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

Rule 2393

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

Rule 2394

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

Rule 2416

```
Int[((a_.) + Log[(c_.)*((d_) + (e_.)*(x_))^(n_.)]*(b_.))^(p_.)*((h_.)*(x_))
^(m_.)*((f_) + (g_.)*(x_)^(r_.))^(q_.), x_Symbol] :> Int[ExpandIntegrand[(a
 + b*Log[c*(d + e*x)^n])^p, (h*x)^m*(f + g*x^r)^q, x], x] /; FreeQ[{a, b, c
, d, e, f, g, h, m, n, p, q, r}, x] && IntegerQ[m] && IntegerQ[q]
```

Rule 2418

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

Rule 2523

```
Int[((a_.) + Log[(c_.)*(RFx_)^(p_.)]*(b_.))^(n_.), x_Symbol] :> Simp[x*(a +
 b*Log[c*RFx^p])^n, x] - Dist[b*n*p, Int[SimplifyIntegrand[(x*(a + b*Log[c*
RFx^p])^(n - 1)*D[RFx, x])/RFx, x], x], x] /; FreeQ[{a, b, c, p}, x] && Rat
ionalFunctionQ[RFx, x] && IGtQ[n, 0]
```

Rule 2524

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

Rule 2525

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

Rule 2528

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

Rule 5052

```
Int[ArcCot[(a_) + (b_.)*(x_)]/((c_) + (d_.)*(x_)^(n_.)), x_Symbol] :> Dist[
```

```
I/2, Int[Log[(-I + a + b*x)/(a + b*x)]/(c + d*x^n), x], x] - Dist[I/2, Int[
Log[(I + a + b*x)/(a + b*x)]/(c + d*x^n), x], x] /; FreeQ[{a, b, c, d}, x]
&& RationalQ[n]
```

Rubi steps

$$\int \frac{\cot^{-1}(a+bx)}{c+\frac{d}{\sqrt{x}}}\,dx = \frac{1}{2}i\int \frac{\log\left(\frac{-i+a+bx}{a+bx}\right)}{c+\frac{d}{\sqrt{x}}}\,dx - \frac{1}{2}i\int \frac{\log\left(\frac{i+a+bx}{a+bx}\right)}{c+\frac{d}{\sqrt{x}}}\,dx$$

$$= i\,\text{Subst}\left(\int \frac{x^2\log\left(\frac{-i+a+bx^2}{a+bx^2}\right)}{d+cx}\,dx, x, \sqrt{x}\right) - i\,\text{Subst}\left(\int \frac{x^2\log\left(\frac{i+a+bx^2}{a+bx^2}\right)}{d+cx}\,dx, x, \sqrt{x}\right)$$

$$= i\,\text{Subst}\left(\int \left(-\frac{d\log\left(\frac{-i+a+bx^2}{a+bx^2}\right)}{c^2} + \frac{x\log\left(\frac{-i+a+bx^2}{a+bx^2}\right)}{c} + \frac{d^2\log\left(\frac{-i+a+bx^2}{a+bx^2}\right)}{c^2(d+cx)}\right)dx, x, \sqrt{x}\right) - i\,\text{Subs}$$

$$= \frac{i\,\text{Subst}\left(\int x\log\left(\frac{-i+a+bx^2}{a+bx^2}\right)dx, x, \sqrt{x}\right)}{c} - \frac{i\,\text{Subst}\left(\int x\log\left(\frac{i+a+bx^2}{a+bx^2}\right)dx, x, \sqrt{x}\right)}{c} - \frac{(id)\,\text{Subs}}{}$$

$$= -\frac{id\sqrt{x}\,\log\left(-\frac{i-a-bx}{a+bx}\right)}{c^2} + \frac{ix\log\left(-\frac{i-a-bx}{a+bx}\right)}{2c} + \frac{id^2\log\left(d+c\sqrt{x}\right)\log\left(-\frac{i-a-bx}{a+bx}\right)}{c^3} + \frac{id\sqrt{x}\,\log\left(\frac{i}{}\right.}{c^2}$$

$$= -\frac{id\sqrt{x}\,\log\left(-\frac{i-a-bx}{a+bx}\right)}{c^2} + \frac{ix\log\left(-\frac{i-a-bx}{a+bx}\right)}{2c} + \frac{id^2\log\left(d+c\sqrt{x}\right)\log\left(-\frac{i-a-bx}{a+bx}\right)}{c^3} + \frac{id\sqrt{x}\,\log\left(\frac{i}{}\right.}{c^2}$$

$$= -\frac{id\sqrt{x}\,\log\left(-\frac{i-a-bx}{a+bx}\right)}{c^2} + \frac{ix\log\left(-\frac{i-a-bx}{a+bx}\right)}{2c} + \frac{id^2\log\left(d+c\sqrt{x}\right)\log\left(-\frac{i-a-bx}{a+bx}\right)}{c^3} + \frac{id\sqrt{x}\,\log\left(\frac{i}{}\right.}{c^2}$$

$$= \frac{2i\sqrt{i+a}\,d\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{i+a}}\right)}{\sqrt{b}\,c^2} - \frac{2i\sqrt{i-a}\,d\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{i-a}}\right)}{\sqrt{b}\,c^2} - \frac{id\sqrt{x}\,\log\left(-\frac{i-a-bx}{a+bx}\right)}{c^2} + \frac{ix\log\left(-\frac{i-}{a}\right.}{2c}$$

$$= \frac{2i\sqrt{i+a}\,d\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{i+a}}\right)}{\sqrt{b}\,c^2} - \frac{2i\sqrt{i-a}\,d\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{i-a}}\right)}{\sqrt{b}\,c^2} + \frac{(1+ia)\log(i-a-bx)}{2bc} - \frac{id\sqrt{x}\,\text{lo}}{}$$

$$= \frac{2i\sqrt{i+a}\,d\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{i+a}}\right)}{\sqrt{b}\,c^2} - \frac{2i\sqrt{i-a}\,d\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{i-a}}\right)}{\sqrt{b}\,c^2} + \frac{id^2\log\left(\frac{c\left(\sqrt{-i-a}-\sqrt{b}\sqrt{x}\right)}{\sqrt{-i-a}\,c+\sqrt{b}\,d}\right)\log\left(d+\right.}{c^3}$$

$$= \frac{2i\sqrt{i+a}\,d\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{i+a}}\right)}{\sqrt{b}\,c^2} - \frac{2i\sqrt{i-a}\,d\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{i-a}}\right)}{\sqrt{b}\,c^2} + \frac{id^2\log\left(\frac{c\left(\sqrt{-i-a}-\sqrt{b}\sqrt{x}\right)}{\sqrt{-i-a}\,c+\sqrt{b}\,d}\right)\log\left(d+\right.}{c^3}$$

$$= \frac{2i\sqrt{i+a}\,d\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{i+a}}\right)}{\sqrt{b}\,c^2} - \frac{2i\sqrt{i-a}\,d\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{i-a}}\right)}{\sqrt{b}\,c^2} + \frac{id^2\log\left(\frac{c\left(\sqrt{-i-a}-\sqrt{b}\sqrt{x}\right)}{\sqrt{-i-a}\,c+\sqrt{b}\,d}\right)\log\left(d+\right.}{c^3}$$

Mathematica [A] time = 0.74, size = 809, normalized size = 0.97

$$ia\log(-a-bx+i)c^2+\log(-a-bx+i)c^2+ibx\log\left(\frac{a+bx-i}{a+bx}\right)c^2-ia\log(a+bx+i)c^2+\log(a+bx+i)c^2-ibx$$

Antiderivative was successfully verified.

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

```
[Out] ((4*I)*Sqrt[I + a]*Sqrt[b]*c*d*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[I + a]] - (4*I
)*Sqrt[I - a]*Sqrt[b]*c*d*ArcTanh[(Sqrt[b]*Sqrt[x])/Sqrt[I - a]] + (2*I)*b*
d^2*Log[(c*(Sqrt[-I - a] - Sqrt[b]*Sqrt[x]))/(Sqrt[-I - a]*c + Sqrt[b]*d)]*
Log[d + c*Sqrt[x]] - (2*I)*b*d^2*Log[(c*(Sqrt[I - a] - Sqrt[b]*Sqrt[x]))/(S
qrt[I - a]*c + Sqrt[b]*d)]*Log[d + c*Sqrt[x]] + (2*I)*b*d^2*Log[(c*(Sqrt[-I
 - a] + Sqrt[b]*Sqrt[x]))/(Sqrt[-I - a]*c - Sqrt[b]*d)]*Log[d + c*Sqrt[x]]
 - (2*I)*b*d^2*Log[(c*(Sqrt[I - a] + Sqrt[b]*Sqrt[x]))/(Sqrt[I - a]*c - Sqrt
[b]*d)]*Log[d + c*Sqrt[x]] + c^2*Log[I - a - b*x] + I*a*c^2*Log[I - a - b*x
] - (2*I)*b*c*d*Sqrt[x]*Log[(-I + a + b*x)/(a + b*x)] + I*b*c^2*x*Log[(-I +
 a + b*x)/(a + b*x)] + (2*I)*b*d^2*Log[d + c*Sqrt[x]]*Log[(-I + a + b*x)/(a
 + b*x)] + c^2*Log[I + a + b*x] - I*a*c^2*Log[I + a + b*x] + (2*I)*b*c*d*Sq
rt[x]*Log[(I + a + b*x)/(a + b*x)] - I*b*c^2*x*Log[(I + a + b*x)/(a + b*x)]
 - (2*I)*b*d^2*Log[d + c*Sqrt[x]]*Log[(I + a + b*x)/(a + b*x)] + (2*I)*b*d^
2*PolyLog[2, (Sqrt[b]*(d + c*Sqrt[x]))/(-(Sqrt[-I - a]*c) + Sqrt[b]*d)] + (
2*I)*b*d^2*PolyLog[2, (Sqrt[b]*(d + c*Sqrt[x]))/(Sqrt[-I - a]*c + Sqrt[b]*d
)] - (2*I)*b*d^2*PolyLog[2, (Sqrt[b]*(d + c*Sqrt[x]))/(-(Sqrt[I - a]*c) + S
qrt[b]*d)] - (2*I)*b*d^2*PolyLog[2, (Sqrt[b]*(d + c*Sqrt[x]))/(Sqrt[I - a]*
c + Sqrt[b]*d)])/(2*b*c^3)
```

fricas [F] time = 0.65, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{cx\,\text{arccot}\,(bx+a)-d\sqrt{x}\,\text{arccot}\,(bx+a)}{c^2x-d^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(b*x+a)/(c+d/x^(1/2)),x, algorithm="fricas")
```

```
[Out] integral((c*x*arccot(b*x + a) - d*sqrt(x)*arccot(b*x + a))/(c^2*x - d^2), x
)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(b*x+a)/(c+d/x^(1/2)),x, algorithm="giac")
```

```
[Out] Timed out
```

maple [C] time = 0.29, size = 376, normalized size = 0.45

$$\frac{\text{arccot}\,(bx+a)\,x}{c}-\frac{2\,\text{arccot}\,(bx+a)\,d\sqrt{x}}{c^2}+\frac{2\,\text{arccot}\,(bx+a)\,d^2\ln\left(d+c\sqrt{x}\right)}{c^3}+\frac{d^2\left(\sum_{\_R1=\text{RootOf}\left(b^2\_Z^4-4b^2d\_Z^3+(2c^2\right.}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arccot(b*x+a)/(c+d/x^(1/2)),x)
```

```
[Out] arccot(b*x+a)/c*x-2*arccot(b*x+a)/c^2*d*x^(1/2)+2*arccot(b*x+a)/c^3*d^2*ln(
d+c*x^(1/2))+1/c*d^2*sum(1/(_R1^2*b-2*_R1*b*d+a*c^2+b*d^2)*(ln(d+c*x^(1/2))
*ln((-c*x^(1/2)+_R1-d)/_R1)+dilog((-c*x^(1/2)+_R1-d)/_R1)),_R1=RootOf(b^2*_
Z^4-4*b^2*d*_Z^3+(2*a*b*c^2+6*b^2*d^2)*_Z^2+(-4*a*b*c^2*d-4*b^2*d^3)*_Z+a^2
*c^4+2*a*b*c^2*d^2+b^2*d^4+c^4))+1/2/c*sum((_R^3-5*_R^2*d+7*_R*d^2-3*d^3)/(
_R^3*b-3*_R^2*b*d+_R*a*c^2+3*_R*b*d^2-a*c^2*d-b*d^3)*ln(c*x^(1/2)-_R+d),_R=
RootOf(b^2*_Z^4-4*b^2*d*_Z^3+(2*a*b*c^2+6*b^2*d^2)*_Z^2+(-4*a*b*c^2*d-4*b^2
*d^3)*_Z+a^2*c^4+2*a*b*c^2*d^2+b^2*d^4+c^4))
```

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

$$\int \frac{\operatorname{arccot}(bx+a)}{c+\frac{d}{\sqrt{x}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(b*x+a)/(c+d/x^(1/2)),x, algorithm="maxima")
```

```
[Out] integrate(arccot(b*x + a)/(c + d/sqrt(x)), x)
```

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

$$\int \frac{\operatorname{acot}(a+b\,x)}{c+\frac{d}{\sqrt{x}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(acot(a + b*x)/(c + d/x^(1/2)),x)
```

```
[Out] int(acot(a + b*x)/(c + d/x^(1/2)), x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(acot(b*x+a)/(c+d/x**(1/2)),x)
```

```
[Out] Timed out
```

3.113 $\int \frac{\cot^{-1}(d+ex)}{a+bx+cx^2} \, dx$

Optimal. Leaf size=367

$$\frac{i\text{Li}_2\left(\frac{2\left(2cd-\left(b-\sqrt{b^2-4ac}\right)e-2c(d+ex)\right)}{\left(-2dc+2ic+be-\sqrt{b^2-4ac}\,e\right)(1-i(d+ex))}+1\right)}{2\sqrt{b^2-4ac}}-\frac{i\text{Li}_2\left(\frac{2\left(2cd-\left(b+\sqrt{b^2-4ac}\right)e-2c(d+ex)\right)}{\left(2c(i-d)+\left(b+\sqrt{b^2-4ac}\right)e\right)(1-i(d+ex))}+1\right)}{2\sqrt{b^2-4ac}}+\frac{\cot^{-1}(d+ex)\log\left(\frac{2e \cdots}{(1-i(d+ex \cdots}\right.}{\sqrt{b^2-\cdots}}$$

```
[Out] arccot(e*x+d)*ln(2*e*(b+2*c*x-(-4*a*c+b^2)^(1/2))/(1-I*(e*x+d))/(2*c*(I-d)+
e*(b-(-4*a*c+b^2)^(1/2))))/(-4*a*c+b^2)^(1/2)-arccot(e*x+d)*ln(2*e*(b+2*c*x
+(-4*a*c+b^2)^(1/2))/(1-I*(e*x+d))/(2*c*(I-d)+e*(b+(-4*a*c+b^2)^(1/2))))/(-
4*a*c+b^2)^(1/2)+1/2*I*polylog(2,1+2*(2*c*d-2*c*(e*x+d)-e*(b-(-4*a*c+b^2)^(
1/2)))/(1-I*(e*x+d))/(2*I*c-2*c*d+b*e-e*(-4*a*c+b^2)^(1/2)))/(-4*a*c+b^2)^(
1/2)-1/2*I*polylog(2,1+2*(2*c*d-2*c*(e*x+d)-e*(b+(-4*a*c+b^2)^(1/2)))/(1-I*
(e*x+d))/(2*c*(I-d)+e*(b+(-4*a*c+b^2)^(1/2))))/(-4*a*c+b^2)^(1/2)
```

Rubi [A] time = 0.69, antiderivative size = 367, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 8, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.421, Rules used = {618, 206, 6728, 5048, 4857, 2402, 2315, 2447}

$$\frac{i\text{PolyLog}\left(2,1+\frac{2\left(-e\left(b-\sqrt{b^2-4ac}\right)-2c(d+ex)+2cd\right)}{(1-i(d+ex))\left(-e\sqrt{b^2-4ac}+be-2cd+2ic\right)}\right)}{2\sqrt{b^2-4ac}}-\frac{i\text{PolyLog}\left(2,1+\frac{2\left(-e\left(\sqrt{b^2-4ac}+b\right)-2c(d+ex)+2cd\right)}{(1-i(d+ex))\left(e\left(\sqrt{b^2-4ac}+b\right)+2c(-d+i)\right)}\right)}{2\sqrt{b^2-4ac}}+\frac{\cot^{-1}(d+\cdots}{\cdots}$$

Antiderivative was successfully verified.

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

```
[Out] (ArcCot[d + e*x]*Log[(2*e*(b - Sqrt[b^2 - 4*a*c] + 2*c*x))/((2*c*(I - d) +
(b - Sqrt[b^2 - 4*a*c])*e)*(1 - I*(d + e*x)))]])/Sqrt[b^2 - 4*a*c] - (ArcCot
[d + e*x]*Log[(2*e*(b + Sqrt[b^2 - 4*a*c] + 2*c*x))/((2*c*(I - d) + (b + Sq
rt[b^2 - 4*a*c])*e)*(1 - I*(d + e*x)))]])/Sqrt[b^2 - 4*a*c] + ((I/2)*PolyLog
[2, 1 + (2*(2*c*d - (b - Sqrt[b^2 - 4*a*c])*e - 2*c*(d + e*x)))/(((2*I)*c -
 2*c*d + b*e - Sqrt[b^2 - 4*a*c]*e)*(1 - I*(d + e*x)))]])/Sqrt[b^2 - 4*a*c]
- ((I/2)*PolyLog[2, 1 + (2*(2*c*d - (b + Sqrt[b^2 - 4*a*c])*e - 2*c*(d + e*
x)))/((2*c*(I - d) + (b + Sqrt[b^2 - 4*a*c])*e)*(1 - I*(d + e*x)))]])/Sqrt[b
^2 - 4*a*c]
```

Rule 206

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

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2402

```
Int[Log[(c_.)/((d_) + (e_.)*(x_))]/((f_) + (g_.)*(x_)^2), x_Symbol] :> -Dis
t[e/g, Subst[Int[Log[2*d*x]/(1 - 2*d*x), x], x, 1/(d + e*x)], x] /; FreeQ[{
```

```
c, d, e, f, g}, x] && EqQ[c, 2*d] && EqQ[e^2*f + d^2*g, 0]
```

Rule 2447

```
Int[Log[u_]*(Pq_)^(m_.), x_Symbol] :> With[{C = FullSimplify[(Pq^m*(1 - u))
/D[u, x]]}, Simp[C*PolyLog[2, 1 - u], x] /; FreeQ[C, x]] /; IntegerQ[m] &&
PolyQ[Pq, x] && RationalFunctionQ[u, x] && LeQ[RationalFunctionExponents[u,
 x][[2]], Expon[Pq, x]]
```

Rule 4857

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))/((d_) + (e_.)*(x_)), x_Symbol] :> -S
imp[((a + b*ArcCot[c*x])*Log[2/(1 - I*c*x)])/e, x] + (-Dist[(b*c)/e, Int[Lo
g[2/(1 - I*c*x)]/(1 + c^2*x^2), x], x] + Dist[(b*c)/e, Int[Log[(2*c*(d + e*
x))/((c*d + I*e)*(1 - I*c*x))]/(1 + c^2*x^2), x], x] + Simp[((a + b*ArcCot[
c*x])*Log[(2*c*(d + e*x))/((c*d + I*e)*(1 - I*c*x))])/e, x]) /; FreeQ[{a, b
, c, d, e}, x] && NeQ[c^2*d^2 + e^2, 0]
```

Rule 5048

```
Int[((a_.) + ArcCot[(c_) + (d_.)*(x_)]*(b_.))^(p_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cCot[x])^p, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, p}, x] && IG
tQ[p, 0]
```

Rule 6728

```
Int[(u_)/((a_.) + (b_.)*(x_)^(n_.) + (c_.)*(x_)^(n2_.)), x_Symbol] :> With[
{v = RationalFunctionExpand[u/(a + b*x^n + c*x^(2*n)), x]}, Int[v, x] /; Su
mQ[v]] /; FreeQ[{a, b, c}, x] && EqQ[n2, 2*n] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{\cot^{-1}(d+ex)}{a+bx+cx^2}\,dx = \int \left(\frac{2c\cot^{-1}(d+ex)}{\sqrt{b^2-4ac}\left(b-\sqrt{b^2-4ac}+2cx\right)} - \frac{2c\cot^{-1}(d+ex)}{\sqrt{b^2-4ac}\left(b+\sqrt{b^2-4ac}+2cx\right)} \right) dx$$

$$= \frac{(2c)\int \frac{\cot^{-1}(d+ex)}{b-\sqrt{b^2-4ac}+2cx}\,dx}{\sqrt{b^2-4ac}} - \frac{(2c)\int \frac{\cot^{-1}(d+ex)}{b+\sqrt{b^2-4ac}+2cx}\,dx}{\sqrt{b^2-4ac}}$$

$$= \frac{(2c)\,\text{Subst}\left(\int \frac{\cot^{-1}(x)}{\frac{-2cd+\left(b-\sqrt{b^2-4ac}\right)e}{e}+\frac{2cx}{e}}\,dx, x, d+ex\right)}{\sqrt{b^2-4ac}\,e} - \frac{(2c)\,\text{Subst}\left(\int \frac{\cot^{-1}(x)}{\frac{-2cd+\left(b+\sqrt{b^2-4ac}\right)e}{e}+\frac{2cx}{e}}\,dx, x, \ldots\right.}{\sqrt{b^2-4ac}\,e}$$

$$= \frac{\cot^{-1}(d+ex)\log\left(\frac{2e\left(b-\sqrt{b^2-4ac}+2cx\right)}{\left(2ic-2cd+be-\sqrt{b^2-4ac}\,e\right)(1-i(d+ex))}\right)}{\sqrt{b^2-4ac}} - \frac{\cot^{-1}(d+ex)\log\left(\frac{2e\left(b+\sqrt{b^2-4ac}\ldots\right.}{\left(2c(i-d)+\left(b+\sqrt{b^2-4ac}\ldots\right.}\right.}{\sqrt{b^2-4ac}}$$

$$= \frac{\cot^{-1}(d+ex)\log\left(\frac{2e\left(b-\sqrt{b^2-4ac}+2cx\right)}{\left(2ic-2cd+be-\sqrt{b^2-4ac}\,e\right)(1-i(d+ex))}\right)}{\sqrt{b^2-4ac}} - \frac{\cot^{-1}(d+ex)\log\left(\frac{2e\left(b+\sqrt{b^2-4ac}\ldots\right.}{\left(2c(i-d)+\left(b+\sqrt{b^2-4ac}\ldots\right.}\right.}{\sqrt{b^2-4ac}}$$

Mathematica [A] time = 0.50, size = 629, normalized size = 1.71

$$-\frac{i\left(\text{Li}_2\left(\frac{e\left(-b-2cx+\sqrt{b^2-4ac}\right)}{2c(d-i)+\left(\sqrt{b^2-4ac}-b\right)e}\right)-\text{Li}_2\left(\frac{e\left(-b-2cx+\sqrt{b^2-4ac}\right)}{2c(d+i)+\left(\sqrt{b^2-4ac}-b\right)e}\right)-\text{Li}_2\left(\frac{e\left(b+2cx+\sqrt{b^2-4ac}\right)}{\left(b+\sqrt{b^2-4ac}\right)e-2c(d-i)}\right)+\text{Li}_2\left(\frac{e\left(b+2cx+\sqrt{b^2-4ac}\right)}{\left(b+\sqrt{b^2-4ac}\right)e-2c(d+i)}\right)\ldots\right.}{\ldots}$$

Warning: Unable to verify antiderivative.

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

```
[Out] ((-1/2*I)*(Log[b - Sqrt[b^2 - 4*a*c] + 2*c*x]*Log[(2*c*(-I + d + e*x))/(2*c
*(-I + d) + (-b + Sqrt[b^2 - 4*a*c])*e)] - Log[b + Sqrt[b^2 - 4*a*c] + 2*c*
x]*Log[(2*c*(-I + d + e*x))/(2*c*(-I + d) - (b + Sqrt[b^2 - 4*a*c])*e)] - L
og[b - Sqrt[b^2 - 4*a*c] + 2*c*x]*Log[(-I + d + e*x)/(d + e*x)] + Log[b + S
qrt[b^2 - 4*a*c] + 2*c*x]*Log[(-I + d + e*x)/(d + e*x)] - Log[b - Sqrt[b^2
- 4*a*c] + 2*c*x]*Log[(2*c*(I + d + e*x))/(2*c*(I + d) + (-b + Sqrt[b^2 - 4
*a*c])*e)] + Log[b + Sqrt[b^2 - 4*a*c] + 2*c*x]*Log[(2*c*(I + d + e*x))/(2*
c*(I + d) - (b + Sqrt[b^2 - 4*a*c])*e)] + Log[b - Sqrt[b^2 - 4*a*c] + 2*c*x
]*Log[(I + d + e*x)/(d + e*x)] - Log[b + Sqrt[b^2 - 4*a*c] + 2*c*x]*Log[(I
+ d + e*x)/(d + e*x)] + PolyLog[2, (e*(-b + Sqrt[b^2 - 4*a*c] - 2*c*x))/(2*
c*(-I + d) + (-b + Sqrt[b^2 - 4*a*c])*e)] - PolyLog[2, (e*(-b + Sqrt[b^2 -
4*a*c] - 2*c*x))/(2*c*(I + d) + (-b + Sqrt[b^2 - 4*a*c])*e)] - PolyLog[2, (
e*(b + Sqrt[b^2 - 4*a*c] + 2*c*x))/(-2*c*(-I + d) + (b + Sqrt[b^2 - 4*a*c])
*e)] + PolyLog[2, (e*(b + Sqrt[b^2 - 4*a*c] + 2*c*x))/(-2*c*(I + d) + (b +
Sqrt[b^2 - 4*a*c])*e)]))/Sqrt[b^2 - 4*a*c]
```

fricas [F] time = 0.64, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\operatorname{arccot}(ex+d)}{cx^2+bx+a}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integral(arccot(e*x + d)/(c*x^2 + b*x + a), x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Timed out
```

maple [B] time = 1.60, size = 4601, normalized size = 12.54

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -e/(a*e^2-b*e*d+c*d^2-(e^2*(4*a*c-b^2))^(1/2)+c)*arccot(e*x+d)^2-1/2*e/(a*e
^2-b*e*d+c*d^2-(e^2*(4*a*c-b^2))^(1/2)+c)*polylog(2,(I*b*e-2*I*d*c+a*e^2-b*
e*d+c*d^2-c)*(I+d+e*x)^2/((e*x+d)^2+1)/(a*e^2-b*e*d+c*d^2-(e^2*(4*a*c-b^2))
^(1/2)+c))-e/(a*e^2-b*e*d+c*d^2+(e^2*(4*a*c-b^2))^(1/2)+c)*arccot(e*x+d)^2-
1/2*e/(a*e^2-b*e*d+c*d^2+(e^2*(4*a*c-b^2))^(1/2)+c)*polylog(2,(I*b*e-2*I*d*
c+a*e^2-b*e*d+c*d^2-c)*(I+d+e*x)^2/((e*x+d)^2+1)/(a*e^2-b*e*d+c*d^2+(e^2*(4
*a*c-b^2))^(1/2)+c))-I/e*(e^2*(4*a*c-b^2))^(1/2)*c/(4*a*c-b^2)/(a*e^2-b*e*d
+c*d^2+(e^2*(4*a*c-b^2))^(1/2)+c)*ln(1-(I*b*e-2*I*d*c+a*e^2-b*e*d+c*d^2-c)*
(I+d+e*x)^2/((e*x+d)^2+1)/(a*e^2-b*e*d+c*d^2+(e^2*(4*a*c-b^2))^(1/2)+c))*ar
ccot(e*x+d)*d^2+I/e*(e^2*(4*a*c-b^2))^(1/2)*c/(4*a*c-b^2)/(a*e^2-b*e*d+c*d^
2-(e^2*(4*a*c-b^2))^(1/2)+c)*ln(1-(I*b*e-2*I*d*c+a*e^2-b*e*d+c*d^2-c)*(I+d+
e*x)^2/((e*x+d)^2+1)/(a*e^2-b*e*d+c*d^2-(e^2*(4*a*c-b^2))^(1/2)+c))*arccot(
e*x+d)*d^2-1/4*I*e*(e^2*(4*a*c-b^2))^(1/2)/c/(4*a*c-b^2)/(a*e^2-b*e*d+c*d^2
+(e^2*(4*a*c-b^2))^(1/2)+c)*ln(1-(I*b*e-2*I*d*c+a*e^2-b*e*d+c*d^2-c)*(I+d+e
*x)^2/((e*x+d)^2+1)/(a*e^2-b*e*d+c*d^2+(e^2*(4*a*c-b^2))^(1/2)+c))*arccot(e
*x+d)*b^2+1/4*I*e*(e^2*(4*a*c-b^2))^(1/2)/c/(4*a*c-b^2)/(a*e^2-b*e*d+c*d^2-
(e^2*(4*a*c-b^2))^(1/2)+c)*ln(1-(I*b*e-2*I*d*c+a*e^2-b*e*d+c*d^2-c)*(I+d+e*
x)^2/((e*x+d)^2+1)/(a*e^2-b*e*d+c*d^2-(e^2*(4*a*c-b^2))^(1/2)+c))*arccot(e*
x+d)*b^2-I*(e^2*(4*a*c-b^2))^(1/2)/(4*a*c-b^2)/(a*e^2-b*e*d+c*d^2-(e^2*(4*a
*c-b^2))^(1/2)+c)*ln(1-(I*b*e-2*I*d*c+a*e^2-b*e*d+c*d^2-c)*(I+d+e*x)^2/((e*
x+d)^2+1)/(a*e^2-b*e*d+c*d^2-(e^2*(4*a*c-b^2))^(1/2)+c))*arccot(e*x+d)*b*d-
I/e*(e^2*(4*a*c-b^2))^(1/2)*c/(4*a*c-b^2)/(a*e^2-b*e*d+c*d^2+(e^2*(4*a*c-b^
2))^(1/2)+c)*ln(1-(I*b*e-2*I*d*c+a*e^2-b*e*d+c*d^2-c)*(I+d+e*x)^2/((e*x+d)^
2+1)/(a*e^2-b*e*d+c*d^2+(e^2*(4*a*c-b^2))^(1/2)+c))*arccot(e*x+d)+I*(e^2*(4
*a*c-b^2))^(1/2)/(4*a*c-b^2)/(a*e^2-b*e*d+c*d^2+(e^2*(4*a*c-b^2))^(1/2)+c)*
ln(1-(I*b*e-2*I*d*c+a*e^2-b*e*d+c*d^2-c)*(I+d+e*x)^2/((e*x+d)^2+1)/(a*e^2-b
*e*d+c*d^2+(e^2*(4*a*c-b^2))^(1/2)+c))*arccot(e*x+d)*b*d+I/e*(e^2*(4*a*c-b^
2))^(1/2)*c/(4*a*c-b^2)/(a*e^2-b*e*d+c*d^2-(e^2*(4*a*c-b^2))^(1/2)+c)*ln(1-
(I*b*e-2*I*d*c+a*e^2-b*e*d+c*d^2-c)*(I+d+e*x)^2/((e*x+d)^2+1)/(a*e^2-b*e*d+
c*d^2-(e^2*(4*a*c-b^2))^(1/2)+c))*arccot(e*x+d)+1/8*e*(e^2*(4*a*c-b^2))^(1/
2)/c/(4*a*c-b^2)/(a*e^2-b*e*d+c*d^2-(e^2*(4*a*c-b^2))^(1/2)+c)*polylog(2,(I
*b*e-2*I*d*c+a*e^2-b*e*d+c*d^2-c)*(I+d+e*x)^2/((e*x+d)^2+1)/(a*e^2-b*e*d+c*
d^2-(e^2*(4*a*c-b^2))^(1/2)+c))*b^2-1/4*e*(e^2*(4*a*c-b^2))^(1/2)/c/(4*a*c-
b^2)/(a*e^2-b*e*d+c*d^2+(e^2*(4*a*c-b^2))^(1/2)+c)*arccot(e*x+d)^2*b^2-1/8*
e*(e^2*(4*a*c-b^2))^(1/2)/c/(4*a*c-b^2)/(a*e^2-b*e*d+c*d^2+(e^2*(4*a*c-b^2)
)^(1/2)+c)*polylog(2,(I*b*e-2*I*d*c+a*e^2-b*e*d+c*d^2-c)*(I+d+e*x)^2/((e*x+
d)^2+1)/(a*e^2-b*e*d+c*d^2+(e^2*(4*a*c-b^2))^(1/2)+c))*b^2+1/4*e*(e^2*(4*a*
c-b^2))^(1/2)/c/(4*a*c-b^2)/(a*e^2-b*e*d+c*d^2-(e^2*(4*a*c-b^2))^(1/2)+c)*a
```

```
rccot(e*x+d)^2*b^2+1/e*(e^2*(4*a*c-b^2))^(1/2)*c/(4*a*c-b^2)/(a*e^2-b*e*d+c
*d^2-(e^2*(4*a*c-b^2))^(1/2)+c)*arccot(e*x+d)^2*d^2+1/2/e*(e^2*(4*a*c-b^2))
^(1/2)*c/(4*a*c-b^2)/(a*e^2-b*e*d+c*d^2-(e^2*(4*a*c-b^2))^(1/2)+c)*polylog(
2,(I*b*e-2*I*d*c+a*e^2-b*e*d+c*d^2-c)*(I+d+e*x)^2/((e*x+d)^2+1)/(a*e^2-b*e*
d+c*d^2-(e^2*(4*a*c-b^2))^(1/2)+c))*d^2-1/e*(e^2*(4*a*c-b^2))^(1/2)*c/(4*a*
c-b^2)/(a*e^2-b*e*d+c*d^2+(e^2*(4*a*c-b^2))^(1/2)+c)*arccot(e*x+d)^2*d^2-1/
2/e*(e^2*(4*a*c-b^2))^(1/2)*c/(4*a*c-b^2)/(a*e^2-b*e*d+c*d^2+(e^2*(4*a*c-b^
2))^(1/2)+c)*polylog(2,(I*b*e-2*I*d*c+a*e^2-b*e*d+c*d^2-c)*(I+d+e*x)^2/((e*
x+d)^2+1)/(a*e^2-b*e*d+c*d^2+(e^2*(4*a*c-b^2))^(1/2)+c))*d^2+1/4*e*(e^2*(4*
a*c-b^2))^(1/2)/c/(a*e^2-b*e*d+c*d^2-(e^2*(4*a*c-b^2))^(1/2)+c)*arccot(e*x+
d)^2-1/8*e*(e^2*(4*a*c-b^2))^(1/2)/c/(a*e^2-b*e*d+c*d^2+(e^2*(4*a*c-b^2))^(
1/2)+c)*polylog(2,(I*b*e-2*I*d*c+a*e^2-b*e*d+c*d^2-c)*(I+d+e*x)^2/((e*x+d)^
2+1)/(a*e^2-b*e*d+c*d^2+(e^2*(4*a*c-b^2))^(1/2)+c))+1/8*e*(e^2*(4*a*c-b^2))
^(1/2)/c/(a*e^2-b*e*d+c*d^2-(e^2*(4*a*c-b^2))^(1/2)+c)*polylog(2,(I*b*e-2*I
*d*c+a*e^2-b*e*d+c*d^2-c)*(I+d+e*x)^2/((e*x+d)^2+1)/(a*e^2-b*e*d+c*d^2-(e^2
*(4*a*c-b^2))^(1/2)+c))-I*e/(a*e^2-b*e*d+c*d^2+(e^2*(4*a*c-b^2))^(1/2)+c)*l
n(1-(I*b*e-2*I*d*c+a*e^2-b*e*d+c*d^2-c)*(I+d+e*x)^2/((e*x+d)^2+1)/(a*e^2-b*
e*d+c*d^2+(e^2*(4*a*c-b^2))^(1/2)+c))*arccot(e*x+d)-I*e/(a*e^2-b*e*d+c*d^2-
(e^2*(4*a*c-b^2))^(1/2)+c)*ln(1-(I*b*e-2*I*d*c+a*e^2-b*e*d+c*d^2-c)*(I+d+e*
x)^2/((e*x+d)^2+1)/(a*e^2-b*e*d+c*d^2-(e^2*(4*a*c-b^2))^(1/2)+c))*arccot(e*
x+d)-(e^2*(4*a*c-b^2))^(1/2)/(4*a*c-b^2)/(a*e^2-b*e*d+c*d^2-(e^2*(4*a*c-b^2
))^(1/2)+c)*arccot(e*x+d)^2*b*d-1/2*(e^2*(4*a*c-b^2))^(1/2)/(4*a*c-b^2)/(a*
e^2-b*e*d+c*d^2-(e^2*(4*a*c-b^2))^(1/2)+c)*polylog(2,(I*b*e-2*I*d*c+a*e^2-b
*e*d+c*d^2-c)*(I+d+e*x)^2/((e*x+d)^2+1)/(a*e^2-b*e*d+c*d^2-(e^2*(4*a*c-b^2)
)^(1/2)+c))*b*d+(e^2*(4*a*c-b^2))^(1/2)/(4*a*c-b^2)/(a*e^2-b*e*d+c*d^2+(e^2
*(4*a*c-b^2))^(1/2)+c)*arccot(e*x+d)^2*b*d+1/2*(e^2*(4*a*c-b^2))^(1/2)/(4*a
*c-b^2)/(a*e^2-b*e*d+c*d^2+(e^2*(4*a*c-b^2))^(1/2)+c)*polylog(2,(I*b*e-2*I*
d*c+a*e^2-b*e*d+c*d^2-c)*(I+d+e*x)^2/((e*x+d)^2+1)/(a*e^2-b*e*d+c*d^2+(e^2*
(4*a*c-b^2))^(1/2)+c))*b*d+1/2/e*(e^2*(4*a*c-b^2))^(1/2)*c/(4*a*c-b^2)/(a*e
^2-b*e*d+c*d^2-(e^2*(4*a*c-b^2))^(1/2)+c)*polylog(2,(I*b*e-2*I*d*c+a*e^2-b*
e*d+c*d^2-c)*(I+d+e*x)^2/((e*x+d)^2+1)/(a*e^2-b*e*d+c*d^2-(e^2*(4*a*c-b^2))
^(1/2)+c))-1/e*(e^2*(4*a*c-b^2))^(1/2)*c/(4*a*c-b^2)/(a*e^2-b*e*d+c*d^2+(e^
2*(4*a*c-b^2))^(1/2)+c)*arccot(e*x+d)^2-1/2/e*(e^2*(4*a*c-b^2))^(1/2)*c/(4*
a*c-b^2)/(a*e^2-b*e*d+c*d^2+(e^2*(4*a*c-b^2))^(1/2)+c)*polylog(2,(I*b*e-2*I
*d*c+a*e^2-b*e*d+c*d^2-c)*(I+d+e*x)^2/((e*x+d)^2+1)/(a*e^2-b*e*d+c*d^2+(e^2
*(4*a*c-b^2))^(1/2)+c))+1/e*(e^2*(4*a*c-b^2))^(1/2)*c/(4*a*c-b^2)/(a*e^2-b*
e*d+c*d^2-(e^2*(4*a*c-b^2))^(1/2)+c)*arccot(e*x+d)^2-1/4*I*e*(e^2*(4*a*c-b^
2))^(1/2)/c/(a*e^2-b*e*d+c*d^2+(e^2*(4*a*c-b^2))^(1/2)+c)*ln(1-(I*b*e-2*I*d
*c+a*e^2-b*e*d+c*d^2-c)*(I+d+e*x)^2/((e*x+d)^2+1)/(a*e^2-b*e*d+c*d^2+(e^2*(
4*a*c-b^2))^(1/2)+c))*arccot(e*x+d)+1/4*I*e*(e^2*(4*a*c-b^2))^(1/2)/c/(a*e^
2-b*e*d+c*d^2-(e^2*(4*a*c-b^2))^(1/2)+c)*ln(1-(I*b*e-2*I*d*c+a*e^2-b*e*d+c*
d^2-c)*(I+d+e*x)^2/((e*x+d)^2+1)/(a*e^2-b*e*d+c*d^2-(e^2*(4*a*c-b^2))^(1/2)
+c))*arccot(e*x+d)-1/4*e*(e^2*(4*a*c-b^2))^(1/2)/c/(a*e^2-b*e*d+c*d^2+(e^2*
(4*a*c-b^2))^(1/2)+c)*arccot(e*x+d)^2
```

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

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive or negative?
```

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

$$\int \frac{\mathrm{acot}\left(d+e\,x\right)}{c\,x^2+b\,x+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Timed out
```

3.114 $\int \frac{\cot^{-1}(a+bx)}{\sqrt{1+a^2+2abx+b^2x^2}} \, dx$

Optimal. Leaf size=132

$$-\frac{i\text{Li}_2\left(-\frac{i\sqrt{i(a+bx)+1}}{\sqrt{1-i(a+bx)}}\right)}{b}+\frac{i\text{Li}_2\left(\frac{i\sqrt{i(a+bx)+1}}{\sqrt{1-i(a+bx)}}\right)}{b}-\frac{2i\tan^{-1}\left(\frac{\sqrt{1+i(a+bx)}}{\sqrt{1-i(a+bx)}}\right)\cot^{-1}(a+bx)}{b}$$

```
[Out] -2*I*arccot(b*x+a)*arctan((1+I*(b*x+a))^(1/2)/(1-I*(b*x+a))^(1/2))/b-I*poly
log(2,-I*(1+I*(b*x+a))^(1/2)/(1-I*(b*x+a))^(1/2))/b+I*polylog(2,I*(1+I*(b*x
+a))^(1/2)/(1-I*(b*x+a))^(1/2))/b
```

Rubi [A] time = 0.10, antiderivative size = 132, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.071, Rules used = {5056, 4887}

$$-\frac{i\text{PolyLog}\left(2,-\frac{i\sqrt{1+i(a+bx)}}{\sqrt{1-i(a+bx)}}\right)}{b}+\frac{i\text{PolyLog}\left(2,\frac{i\sqrt{1+i(a+bx)}}{\sqrt{1-i(a+bx)}}\right)}{b}-\frac{2i\tan^{-1}\left(\frac{\sqrt{1+i(a+bx)}}{\sqrt{1-i(a+bx)}}\right)\cot^{-1}(a+bx)}{b}$$

Antiderivative was successfully verified.

```
[In] Int[ArcCot[a + b*x]/Sqrt[1 + a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] ((-2*I)*ArcCot[a + b*x]*ArcTan[Sqrt[1 + I*(a + b*x)]/Sqrt[1 - I*(a + b*x)]]
)/b - (I*PolyLog[2, ((-I)*Sqrt[1 + I*(a + b*x)])/Sqrt[1 - I*(a + b*x)]])/b
+ (I*PolyLog[2, (I*Sqrt[1 + I*(a + b*x)])/Sqrt[1 - I*(a + b*x)]])/b
```

Rule 4887

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))/Sqrt[(d_) + (e_.)*(x_)^2], x_Symbol]
 :> Simp[(-2*I*(a + b*ArcCot[c*x])*ArcTan[Sqrt[1 + I*c*x]/Sqrt[1 - I*c*x]])
/(c*Sqrt[d]), x] + (-Simp[(I*b*PolyLog[2, -((I*Sqrt[1 + I*c*x])/Sqrt[1 - I*
c*x])])/(c*Sqrt[d]), x] + Simp[(I*b*PolyLog[2, (I*Sqrt[1 + I*c*x])/Sqrt[1 -
 I*c*x]])/(c*Sqrt[d]), x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[e, c^2*d] &&
 GtQ[d, 0]
```

Rule 5056

```
Int[((a_.) + ArcCot[(c_) + (d_.)*(x_)]*(b_.))^(p_.)*((A_.) + (B_.)*(x_) + (
C_.)*(x_)^2)^(q_.), x_Symbol] :> Dist[1/d, Subst[Int[(C/d^2 + (C*x^2)/d^2)^
q*(a + b*ArcCot[x])^p, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, A, B, C, p
, q}, x] && EqQ[B*(1 + c^2) - 2*A*c*d, 0] && EqQ[2*c*C - B*d, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{\cot^{-1}(a+bx)}{\sqrt{1+a^2+2abx+b^2x^2}}\,dx&=\frac{\text{Subst}\left(\int \frac{\cot^{-1}(x)}{\sqrt{1+x^2}}\,dx,x,a+bx\right)}{b}\\&=-\frac{2i\cot^{-1}(a+bx)\tan^{-1}\left(\frac{\sqrt{1+i(a+bx)}}{\sqrt{1-i(a+bx)}}\right)}{b}-\frac{i\text{Li}_2\left(-\frac{i\sqrt{1+i(a+bx)}}{\sqrt{1-i(a+bx)}}\right)}{b}+\frac{i\text{Li}_2\left(\frac{i\sqrt{1+i(a+bx)}}{\sqrt{1-i(a+bx)}}\right)}{b}\end{aligned}$$

Mathematica [A] time = 0.16, size = 127, normalized size = 0.96

$$-\frac{\sqrt{a^2+2abx+b^2x^2+1}\left(i\text{Li}_2\left(-e^{i\cot^{-1}(a+bx)}\right)-i\text{Li}_2\left(e^{i\cot^{-1}(a+bx)}\right)+\cot^{-1}(a+bx)\left(\log\left(1-e^{i\cot^{-1}(a+bx)}\right)-\log\right.\right.}{b(a+bx)\sqrt{\frac{1}{(a+bx)^2}+1}}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[ArcCot[a + b*x]/Sqrt[1 + a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] -((Sqrt[1 + a^2 + 2*a*b*x + b^2*x^2]*(ArcCot[a + b*x]*(Log[1 - E^(I*ArcCot[
a + b*x])] - Log[1 + E^(I*ArcCot[a + b*x])]) + I*PolyLog[2, -E^(I*ArcCot[a
+ b*x])] - I*PolyLog[2, E^(I*ArcCot[a + b*x])]))/(b*(a + b*x)*Sqrt[1 + (a +
 b*x)^(-2)]))
```

fricas [F] time = 0.63, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\operatorname{arccot}\left(bx+a\right)}{\sqrt{b^2x^2+2\,abx+a^2+1}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(b*x+a)/(b^2*x^2+2*a*b*x+a^2+1)^(1/2),x, algorithm="fricas"
)
```

```
[Out] integral(arccot(b*x + a)/sqrt(b^2*x^2 + 2*a*b*x + a^2 + 1), x)
```

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

$$\int \frac{\operatorname{arccot}\left(bx+a\right)}{\sqrt{b^2x^2+2\,abx+a^2+1}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(b*x+a)/(b^2*x^2+2*a*b*x+a^2+1)^(1/2),x, algorithm="giac")
```

```
[Out] integrate(arccot(b*x + a)/sqrt(b^2*x^2 + 2*a*b*x + a^2 + 1), x)
```

maple [A] time = 0.69, size = 125, normalized size = 0.95

$$-\frac{\operatorname{arccot}\left(bx+a\right)\ln\left(1-\frac{bx+a+i}{\sqrt{1+(bx+a)^2}}\right)}{b}+\frac{\operatorname{arccot}\left(bx+a\right)\ln\left(1+\frac{bx+a+i}{\sqrt{1+(bx+a)^2}}\right)}{b}-\frac{i\operatorname{dilog}\left(1+\frac{bx+a+i}{\sqrt{1+(bx+a)^2}}\right)}{b}+\frac{i\operatorname{dilog}\left(1-\right.}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arccot(b*x+a)/(b^2*x^2+2*a*b*x+a^2+1)^(1/2),x)
```

```
[Out] -1/b*arccot(b*x+a)*ln(1-(I+a+b*x)/(1+(b*x+a)^2)^(1/2))+1/b*arccot(b*x+a)*ln
(1+(I+a+b*x)/(1+(b*x+a)^2)^(1/2))-I/b*dilog(1+(I+a+b*x)/(1+(b*x+a)^2)^(1/2)
)+I/b*dilog(1-(I+a+b*x)/(1+(b*x+a)^2)^(1/2))
```

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

$$\int \frac{\operatorname{arccot}\left(bx+a\right)}{\sqrt{b^2x^2+2\,abx+a^2+1}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(b*x+a)/(b^2*x^2+2*a*b*x+a^2+1)^(1/2),x, algorithm="maxima"
)
```

```
[Out] integrate(arccot(b*x + a)/sqrt(b^2*x^2 + 2*a*b*x + a^2 + 1), x)
```

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

$$\int \frac{\mathrm{acot}\left(a+b\,x\right)}{\sqrt{a^2+2\,a\,b\,x+b^2\,x^2+1}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(acot(a + b*x)/(a^2 + b^2*x^2 + 2*a*b*x + 1)^(1/2),x)
```

```
[Out] int(acot(a + b*x)/(a^2 + b^2*x^2 + 2*a*b*x + 1)^(1/2), x)
```

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

$$\int \frac{\operatorname{acot}(a+bx)}{\sqrt{a^2+2abx+b^2x^2+1}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(acot(b*x+a)/(b**2*x**2+2*a*b*x+a**2+1)**(1/2),x)
```

```
[Out] Integral(acot(a + b*x)/sqrt(a**2 + 2*a*b*x + b**2*x**2 + 1), x)
```

3.115 $\int \frac{\cot^{-1}(a+bx)}{\sqrt{(1+a^2)c+2abcx+b^2cx^2}}\,dx$

Optimal. Leaf size=216

$$-\frac{i\sqrt{(a+bx)^2+1}\,\mathrm{Li}_2\left(-\frac{i\sqrt{i(a+bx)+1}}{\sqrt{1-i(a+bx)}}\right)}{b\sqrt{c(a+bx)^2+c}}+\frac{i\sqrt{(a+bx)^2+1}\,\mathrm{Li}_2\left(\frac{i\sqrt{i(a+bx)+1}}{\sqrt{1-i(a+bx)}}\right)}{b\sqrt{c(a+bx)^2+c}}-\frac{2i\sqrt{(a+bx)^2+1}\,\tan^{-1}\left(\frac{\sqrt{1+i(a+bx)}}{\sqrt{1-i(a+bx)}}\right)\cot^{-1}}{b\sqrt{c(a+bx)^2+c}}$$

```
[Out] -2*I*arccot(b*x+a)*arctan((1+I*(b*x+a))^(1/2)/(1-I*(b*x+a))^(1/2))*(1+(b*x+
a)^2)^(1/2)/b/(c+c*(b*x+a)^2)^(1/2)-I*polylog(2,-I*(1+I*(b*x+a))^(1/2)/(1-I
*(b*x+a))^(1/2))*(1+(b*x+a)^2)^(1/2)/b/(c+c*(b*x+a)^2)^(1/2)+I*polylog(2,I*
(1+I*(b*x+a))^(1/2)/(1-I*(b*x+a))^(1/2))*(1+(b*x+a)^2)^(1/2)/b/(c+c*(b*x+a)
^2)^(1/2)
```

Rubi [A] time = 0.17, antiderivative size = 216, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {5056, 4891, 4887}

$$-\frac{i\sqrt{(a+bx)^2+1}\,\mathrm{PolyLog}\left(2,-\frac{i\sqrt{1+i(a+bx)}}{\sqrt{1-i(a+bx)}}\right)}{b\sqrt{c(a+bx)^2+c}}+\frac{i\sqrt{(a+bx)^2+1}\,\mathrm{PolyLog}\left(2,\frac{i\sqrt{1+i(a+bx)}}{\sqrt{1-i(a+bx)}}\right)}{b\sqrt{c(a+bx)^2+c}}-\frac{2i\sqrt{(a+bx)^2+1}\,\tan^{-1}\left(\right.}{b\sqrt{c(a+}}$$

Antiderivative was successfully verified.

```
[In] Int[ArcCot[a + b*x]/Sqrt[(1 + a^2)*c + 2*a*b*c*x + b^2*c*x^2],x]
```

```
[Out] ((-2*I)*Sqrt[1 + (a + b*x)^2]*ArcCot[a + b*x]*ArcTan[Sqrt[1 + I*(a + b*x)]/
Sqrt[1 - I*(a + b*x)]])/(b*Sqrt[c + c*(a + b*x)^2]) - (I*Sqrt[1 + (a + b*x)
^2]*PolyLog[2, ((-I)*Sqrt[1 + I*(a + b*x)])/Sqrt[1 - I*(a + b*x)]])/(b*Sqrt
[c + c*(a + b*x)^2]) + (I*Sqrt[1 + (a + b*x)^2]*PolyLog[2, (I*Sqrt[1 + I*(a
 + b*x)])/Sqrt[1 - I*(a + b*x)]])/(b*Sqrt[c + c*(a + b*x)^2])
```

Rule 4887

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))/Sqrt[(d_) + (e_.)*(x_)^2], x_Symbol]
 :> Simp[(-2*I*(a + b*ArcCot[c*x])*ArcTan[Sqrt[1 + I*c*x]/Sqrt[1 - I*c*x]])
/(c*Sqrt[d]), x] + (-Simp[(I*b*PolyLog[2, -((I*Sqrt[1 + I*c*x])/Sqrt[1 - I*
c*x])])/(c*Sqrt[d]), x] + Simp[(I*b*PolyLog[2, (I*Sqrt[1 + I*c*x])/Sqrt[1 -
 I*c*x]])/(c*Sqrt[d]), x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[e, c^2*d] &&
 GtQ[d, 0]
```

Rule 4891

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Dist[Sqrt[1 + c^2*x^2]/Sqrt[d + e*x^2], Int[(a + b*ArcCot[c*x])^p
/Sqrt[1 + c^2*x^2], x], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[e, c^2*d] &&
 IGtQ[p, 0] &&  !GtQ[d, 0]
```

Rule 5056

```
Int[((a_.) + ArcCot[(c_) + (d_.)*(x_)]*(b_.))^(p_.)*((A_.) + (B_.)*(x_) + (
C_.)*(x_)^2)^(q_.), x_Symbol] :> Dist[1/d, Subst[Int[(C/d^2 + (C*x^2)/d^2)^
q*(a + b*ArcCot[x])^p, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, A, B, C, p
, q}, x] && EqQ[B*(1 + c^2) - 2*A*c*d, 0] && EqQ[2*c*C - B*d, 0]
```

Rubi steps

$$\int \frac{\cot^{-1}(a+bx)}{\sqrt{\left(1+a^2\right)c+2abcx+b^2cx^2}}\,dx=\frac{\text{Subst}\left(\int \frac{\cot^{-1}(x)}{\sqrt{c+cx^2}}\,dx,x,a+bx\right)}{b}$$
$$=\frac{\sqrt{1+(a+bx)^2}\ \text{Subst}\left(\int \frac{\cot^{-1}(x)}{\sqrt{1+x^2}}\,dx,x,a+bx\right)}{b\sqrt{c+c(a+bx)^2}}$$
$$=-\frac{2i\sqrt{1+(a+bx)^2}\ \cot^{-1}(a+bx)\tan^{-1}\left(\frac{\sqrt{1+i(a+bx)}}{\sqrt{1-i(a+bx)}}\right)}{b\sqrt{c+c(a+bx)^2}}-\frac{i\sqrt{1+(a+bx)^2}\ \text{L}}{b\sqrt{c+c(}}$$

Mathematica [A] time = 0.09, size = 138, normalized size = 0.64

$$-\frac{\left((a+bx)^2+1\right)\left(i\text{Li}_2\left(-e^{i\cot^{-1}(a+bx)}\right)-i\text{Li}_2\left(e^{i\cot^{-1}(a+bx)}\right)+\cot^{-1}(a+bx)\left(\log\left(1-e^{i\cot^{-1}(a+bx)}\right)-\log\left(1+e^{i\,\text{cc}}\right.\right.\right.}{b(a+bx)\sqrt{\frac{1}{(a+bx)^2}+1}\sqrt{c\left(a^2+2abx+b^2x^2+1\right)}}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[ArcCot[a + b*x]/Sqrt[(1 + a^2)*c + 2*a*b*c*x + b^2*c*x^2],x]
```

```
[Out] -(((1 + (a + b*x)^2)*(ArcCot[a + b*x]*(Log[1 - E^(I*ArcCot[a + b*x])] - Log
[1 + E^(I*ArcCot[a + b*x])]) + I*PolyLog[2, -E^(I*ArcCot[a + b*x])] - I*Pol
yLog[2, E^(I*ArcCot[a + b*x])]))/(b*(a + b*x)*Sqrt[c*(1 + a^2 + 2*a*b*x + b
^2*x^2)]*Sqrt[1 + (a + b*x)^(-2)]))
```

fricas [F] time = 0.61, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\text{arccot}\left(bx+a\right)}{\sqrt{b^2cx^2+2\,abcx+\left(a^2+1\right)c}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(b*x+a)/((a^2+1)*c+2*a*b*c*x+c*x^2*b^2)^(1/2),x, algorithm=
"fricas")
```

```
[Out] integral(arccot(b*x + a)/sqrt(b^2*c*x^2 + 2*a*b*c*x + (a^2 + 1)*c), x)
```

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

$$\int \frac{\text{arccot}\left(bx+a\right)}{\sqrt{b^2cx^2+2\,abcx+\left(a^2+1\right)c}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(b*x+a)/((a^2+1)*c+2*a*b*c*x+c*x^2*b^2)^(1/2),x, algorithm=
"giac")
```

```
[Out] integrate(arccot(b*x + a)/sqrt(b^2*c*x^2 + 2*a*b*c*x + (a^2 + 1)*c), x)
```

maple [A] time = 1.02, size = 156, normalized size = 0.72

$$\frac{i\left(i\ln\left(1-\frac{bx+a+i}{\sqrt{1+(bx+a)^2}}\right)\text{arccot}\left(bx+a\right)-i\ln\left(1+\frac{bx+a+i}{\sqrt{1+(bx+a)^2}}\right)\text{arccot}\left(bx+a\right)+\text{polylog}\left(2,\frac{bx+a+i}{\sqrt{1+(bx+a)^2}}\right)-\text{poly}\right.}{\sqrt{b^2x^2+2abx+a^2+1}\ bc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arccot(b*x+a)/((a^2+1)*c+2*a*b*c*x+b^2*c*x^2)^(1/2),x)
```

```
[Out] I*(I*ln(1-(I+a+b*x)/(1+(b*x+a)^2)^(1/2))*arccot(b*x+a)-I*ln(1+(I+a+b*x)/(1+
(b*x+a)^2)^(1/2))*arccot(b*x+a)+polylog(2,(I+a+b*x)/(1+(b*x+a)^2)^(1/2))-po
lylog(2,-(I+a+b*x)/(1+(b*x+a)^2)^(1/2)))*(c*(-I+a+b*x)*(I+a+b*x))^(1/2)/(b^
2*x^2+2*a*b*x+a^2+1)^(1/2)/b/c
```

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

$$\int \frac{\operatorname{arccot}(bx+a)}{\sqrt{b^2cx^2+2\,abcx+\left(a^2+1\right)c}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(b*x+a)/((a^2+1)*c+2*a*b*c*x+c*x^2*b^2)^(1/2),x, algorithm=
"maxima")
```

```
[Out] integrate(arccot(b*x + a)/sqrt(b^2*c*x^2 + 2*a*b*c*x + (a^2 + 1)*c), x)
```

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

$$\int \frac{\operatorname{acot}(a+b\,x)}{\sqrt{c\,b^2\,x^2+2\,a\,c\,b\,x+c\,\left(a^2+1\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(acot(a + b*x)/(c*(a^2 + 1) + b^2*c*x^2 + 2*a*b*c*x)^(1/2),x)
```

```
[Out] int(acot(a + b*x)/(c*(a^2 + 1) + b^2*c*x^2 + 2*a*b*c*x)^(1/2), x)
```

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

$$\int \frac{\operatorname{acot}(a+bx)}{\sqrt{c\left(a^2+2abx+b^2x^2+1\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(acot(b*x+a)/((a**2+1)*c+2*a*b*c*x+c*x**2*b**2)**(1/2),x)
```

```
[Out] Integral(acot(a + b*x)/sqrt(c*(a**2 + 2*a*b*x + b**2*x**2 + 1)), x)
```

3.116 $\int \frac{\cot^{-1}(a+bx)}{\sqrt[3]{1+a^2+2abx+b^2x^2}}\,dx$

Optimal. Leaf size=23

$$\text{Int}\left(\frac{\cot^{-1}(a+bx)}{\sqrt[3]{(a+bx)^2+1}},x\right)$$

```
[Out] Unintegrable(arccot(b*x+a)/(1+(b*x+a)^2)^(1/3),x)
```

Rubi [A] time = 0.04, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\cot^{-1}(a+bx)}{\sqrt[3]{1+a^2+2abx+b^2x^2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[ArcCot[a + b*x]/(1 + a^2 + 2*a*b*x + b^2*x^2)^(1/3),x]
```

```
[Out] Defer[Subst][Defer[Int][ArcCot[x]/(1 + x^2)^(1/3), x], x, a + b*x]/b
```

Rubi steps

$$\int \frac{\cot^{-1}(a+bx)}{\sqrt[3]{1+a^2+2abx+b^2x^2}}\,dx = \frac{\text{Subst}\left(\int \frac{\cot^{-1}(x)}{\sqrt[3]{1+x^2}}\,dx,x,a+bx\right)}{b}$$

Mathematica [A] time = 0.41, size = 177, normalized size = 7.70

$$\frac{6\Gamma\left(\frac{11}{6}\right)\Gamma\left(\frac{7}{3}\right)\left(4(a+bx)\,{}_2F_1\left(1,\frac{4}{3};\frac{11}{6};\frac{1}{a^2+2bxa+b^2x^2+1}\right)\cot^{-1}(a+bx)+5\left(a^2+2abx+b^2x^2+1\right)\left(2(a+bx)\cot^{-1}\right.\right.}{20b\Gamma\left(\frac{11}{6}\right)\Gamma\left(\frac{7}{3}\right)\left(a^2+2abx+b^2x^2+1\right)^{4/3}}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[ArcCot[a + b*x]/(1 + a^2 + 2*a*b*x + b^2*x^2)^(1/3),x]
```

```
[Out] (6*Gamma[11/6]*Gamma[7/3]*(5*(1 + a^2 + 2*a*b*x + b^2*x^2)*(-3 + 2*(a + b*x
)*ArcCot[a + b*x]) + 4*(a + b*x)*ArcCot[a + b*x]*Hypergeometric2F1[1, 4/3,
11/6, (1 + a^2 + 2*a*b*x + b^2*x^2)^(-1)]) - 5*2^(1/3)*Sqrt[Pi]*Gamma[5/3]*
HypergeometricPFQ[{1, 4/3, 4/3}, {11/6, 7/3}, (1 + a^2 + 2*a*b*x + b^2*x^2)
^(-1)])/(20*b*(1 + a^2 + 2*a*b*x + b^2*x^2)^(4/3)*Gamma[11/6]*Gamma[7/3])
```

fricas [A] time = 1.41, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\operatorname{arccot}(bx+a)}{\left(b^2x^2+2\,abx+a^2+1\right)^{\frac{1}{3}}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(b*x+a)/(b^2*x^2+2*a*b*x+a^2+1)^(1/3),x, algorithm="fricas"
)
```

```
[Out] integral(arccot(b*x + a)/(b^2*x^2 + 2*a*b*x + a^2 + 1)^(1/3), x)
```

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

$$\int \frac{\operatorname{arccot}(bx+a)}{\left(b^2x^2+2\,abx+a^2+1\right)^{\frac{1}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(b*x+a)/(b^2*x^2+2*a*b*x+a^2+1)^(1/3),x, algorithm="giac")
```

```
[Out] integrate(arccot(b*x + a)/(b^2*x^2 + 2*a*b*x + a^2 + 1)^(1/3), x)
```

maple [A] time = 1.38, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{arccot}(bx+a)}{\left(b^2x^2+2abx+a^2+1\right)^{\frac{1}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arccot(b*x+a)/(b^2*x^2+2*a*b*x+a^2+1)^(1/3),x)
```

```
[Out] int(arccot(b*x+a)/(b^2*x^2+2*a*b*x+a^2+1)^(1/3),x)
```

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

$$\int \frac{\operatorname{arccot}(bx+a)}{\left(b^2x^2+2\,abx+a^2+1\right)^{\frac{1}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(b*x+a)/(b^2*x^2+2*a*b*x+a^2+1)^(1/3),x, algorithm="maxima"
)
```

```
[Out] integrate(arccot(b*x + a)/(b^2*x^2 + 2*a*b*x + a^2 + 1)^(1/3), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{\operatorname{acot}(a+b\,x)}{\left(a^2+2\,a\,b\,x+b^2\,x^2+1\right)^{1/3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(acot(a + b*x)/(a^2 + b^2*x^2 + 2*a*b*x + 1)^(1/3),x)
```

```
[Out] int(acot(a + b*x)/(a^2 + b^2*x^2 + 2*a*b*x + 1)^(1/3), x)
```

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

$$\int \frac{\operatorname{acot}(a+bx)}{\sqrt[3]{a^2+2abx+b^2x^2+1}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(acot(b*x+a)/(b**2*x**2+2*a*b*x+a**2+1)**(1/3),x)
```

```
[Out] Integral(acot(a + b*x)/(a**2 + 2*a*b*x + b**2*x**2 + 1)**(1/3), x)
```

3.117 $\int \frac{\cot^{-1}(a+bx)}{\sqrt[3]{(1+a^2)c+2abcx+b^2cx^2}}\,dx$

Optimal. Leaf size=25

$$\operatorname{Int}\left(\frac{\cot^{-1}(a+bx)}{\sqrt[3]{c(a+bx)^2+c}},x\right)$$

```
[Out] Unintegrable(arccot(b*x+a)/(c+c*(b*x+a)^2)^(1/3),x)
```

Rubi [A] time = 0.05, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\cot^{-1}(a+bx)}{\sqrt[3]{(1+a^2)\,c+2abcx+b^2cx^2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[ArcCot[a + b*x]/((1 + a^2)*c + 2*a*b*c*x + b^2*c*x^2)^(1/3),x]
[Out] Defer[Subst][Defer[Int][ArcCot[x]/(c + c*x^2)^(1/3), x], x, a + b*x]/b
```

Rubi steps

$$\int \frac{\cot^{-1}(a+bx)}{\sqrt[3]{(1+a^2)\,c+2abcx+b^2cx^2}}\,dx=\frac{\operatorname{Subst}\left(\int \frac{\cot^{-1}(x)}{\sqrt[3]{c+cx^2}}\,dx,x,a+bx\right)}{b}$$

Mathematica [A] time = 0.11, size = 180, normalized size = 7.20

$$\frac{c\left(6\Gamma\left(\frac{11}{6}\right)\Gamma\left(\frac{7}{3}\right)\left(4(a+bx)\,{}_2F_1\left(1,\frac{4}{3};\frac{11}{6};\frac{1}{a^2+2bxa+b^2x^2+1}\right)\cot^{-1}(a+bx)+5\left(a^2+2abx+b^2x^2+1\right)\left(2(a+bx)\cot\right.\right.\right.}{20b\Gamma\left(\frac{11}{6}\right)\Gamma\left(\frac{7}{3}\right)\left(c\left(a^2+2abx+b^2x^2+1\right)\right)^{4}}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[ArcCot[a + b*x]/((1 + a^2)*c + 2*a*b*c*x + b^2*c*x^2)^(1/3),x]
[Out] (c*(6*Gamma[11/6]*Gamma[7/3]*(5*(1 + a^2 + 2*a*b*x + b^2*x^2)*(-3 + 2*(a + 
b*x)*ArcCot[a + b*x]) + 4*(a + b*x)*ArcCot[a + b*x]*Hypergeometric2F1[1, 4/
3, 11/6, (1 + a^2 + 2*a*b*x + b^2*x^2)^(-1)]) - 5*2^(1/3)*Sqrt[Pi]*Gamma[5/
3]*HypergeometricPFQ[{1, 4/3, 4/3}, {11/6, 7/3}, (1 + a^2 + 2*a*b*x + b^2*x
^2)^(-1)]))/(20*b*(c*(1 + a^2 + 2*a*b*x + b^2*x^2))^(4/3)*Gamma[11/6]*Gamma
[7/3])
```

fricas [A] time = 2.42, size = 0, normalized size = 0.00

$$\operatorname{integral}\left(\frac{\operatorname{arccot}(bx+a)}{\left(b^2cx^2+2\,abcx+\left(a^2+1\right)c\right)^{\frac{1}{3}}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(b*x+a)/((a^2+1)*c+2*a*b*c*x+c*x^2*b^2)^(1/3),x, algorithm=
"fricas")
[Out] integral(arccot(b*x + a)/(b^2*c*x^2 + 2*a*b*c*x + (a^2 + 1)*c)^(1/3), x)
```

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

$$\int \frac{\operatorname{arccot}(bx+a)}{\left(b^2cx^2+2\,abcx+\left(a^2+1\right)c\right)^{\frac{1}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(b*x+a)/((a^2+1)*c+2*a*b*c*x+c*x^2*b^2)^(1/3),x, algorithm=
"giac")
```

```
[Out] integrate(arccot(b*x + a)/(b^2*c*x^2 + 2*a*b*c*x + (a^2 + 1)*c)^(1/3), x)
```

maple [A] time = 1.30, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{arccot}(bx+a)}{\left(\left(a^2+1\right)c+2abcx+b^2c\,x^2\right)^{\frac{1}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arccot(b*x+a)/((a^2+1)*c+2*a*b*c*x+b^2*c*x^2)^(1/3),x)
```

```
[Out] int(arccot(b*x+a)/((a^2+1)*c+2*a*b*c*x+b^2*c*x^2)^(1/3),x)
```

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

$$\int \frac{\operatorname{arccot}(bx+a)}{\left(b^2cx^2+2\,abcx+\left(a^2+1\right)c\right)^{\frac{1}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(b*x+a)/((a^2+1)*c+2*a*b*c*x+c*x^2*b^2)^(1/3),x, algorithm=
"maxima")
```

```
[Out] integrate(arccot(b*x + a)/(b^2*c*x^2 + 2*a*b*c*x + (a^2 + 1)*c)^(1/3), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{\operatorname{acot}(a+b\,x)}{{\left(c\,b^2\,x^2+2\,a\,c\,b\,x+c\,\left(a^2+1\right)\right)}^{1/3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(acot(a + b*x)/(c*(a^2 + 1) + b^2*c*x^2 + 2*a*b*c*x)^(1/3),x)
```

```
[Out] int(acot(a + b*x)/(c*(a^2 + 1) + b^2*c*x^2 + 2*a*b*c*x)^(1/3), x)
```

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

$$\int \frac{\operatorname{acot}(a+bx)}{\sqrt[3]{c\left(a^2+2abx+b^2x^2+1\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(acot(b*x+a)/((a**2+1)*c+2*a*b*c*x+c*x**2*b**2)**(1/3),x)
```

```
[Out] Integral(acot(a + b*x)/(c*(a**2 + 2*a*b*x + b**2*x**2 + 1))**(1/3), x)
```

3.118 $\int \frac{(a+bx)^2 \cot^{-1}(a+bx)}{\sqrt{1+a^2+2abx+b^2x^2}} \, dx$

Optimal. Leaf size=187

$$\frac{i\text{Li}_2\left(-\frac{i\sqrt{i(a+bx)+1}}{\sqrt{1-i(a+bx)}}\right)}{2b}-\frac{i\text{Li}_2\left(\frac{i\sqrt{i(a+bx)+1}}{\sqrt{1-i(a+bx)}}\right)}{2b}+\frac{\sqrt{(a+bx)^2+1}}{2b}+\frac{(a+bx)\sqrt{(a+bx)^2+1}\,\cot^{-1}(a+bx)}{2b}+\frac{i\tan^{-1}\left(\frac{\sqrt{1+i(}}{\sqrt{1-i(}}\right.}{}$$

```
[Out] I*arccot(b*x+a)*arctan((1+I*(b*x+a))^(1/2)/(1-I*(b*x+a))^(1/2))/b+1/2*I*pol
ylog(2,-I*(1+I*(b*x+a))^(1/2)/(1-I*(b*x+a))^(1/2))/b-1/2*I*polylog(2,I*(1+I
*(b*x+a))^(1/2)/(1-I*(b*x+a))^(1/2))/b+1/2*(1+(b*x+a)^2)^(1/2)/b+1/2*(b*x+a
)*arccot(b*x+a)*(1+(b*x+a)^2)^(1/2)/b
```

Rubi [A] time = 0.22, antiderivative size = 187, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.114, Rules used = {5058, 4953, 261, 4887}

$$\frac{i\text{PolyLog}\left(2,-\frac{i\sqrt{1+i(a+bx)}}{\sqrt{1-i(a+bx)}}\right)}{2b}-\frac{i\text{PolyLog}\left(2,\frac{i\sqrt{1+i(a+bx)}}{\sqrt{1-i(a+bx)}}\right)}{2b}+\frac{\sqrt{(a+bx)^2+1}}{2b}+\frac{(a+bx)\sqrt{(a+bx)^2+1}\,\cot^{-1}(a+bx}{2b}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)^2*ArcCot[a + b*x])/Sqrt[1 + a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] Sqrt[1 + (a + b*x)^2]/(2*b) + ((a + b*x)*Sqrt[1 + (a + b*x)^2]*ArcCot[a + b
*x])/(2*b) + (I*ArcCot[a + b*x]*ArcTan[Sqrt[1 + I*(a + b*x)]/Sqrt[1 - I*(a
+ b*x)]])/b + ((I/2)*PolyLog[2, ((-I)*Sqrt[1 + I*(a + b*x)])/Sqrt[1 - I*(a
+ b*x)]])/b - ((I/2)*PolyLog[2, (I*Sqrt[1 + I*(a + b*x)])/Sqrt[1 - I*(a + b
*x)]])/b
```

Rule 261

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

Rule 4887

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))/Sqrt[(d_) + (e_.)*(x_)^2], x_Symbol]
 :> Simp[(-2*I*(a + b*ArcCot[c*x])*ArcTan[Sqrt[1 + I*c*x]/Sqrt[1 - I*c*x]])
/(c*Sqrt[d]), x] + (-Simp[(I*b*PolyLog[2, -((I*Sqrt[1 + I*c*x])/Sqrt[1 - I*
c*x])])/(c*Sqrt[d]), x] + Simp[(I*b*PolyLog[2, (I*Sqrt[1 + I*c*x])/Sqrt[1 -
 I*c*x]])/(c*Sqrt[d]), x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[e, c^2*d] &&
 GtQ[d, 0]
```

Rule 4953

```
Int[(((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)*((f_.)*(x_))^(m_))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[(f*(f*x)^(m - 1)*Sqrt[d + e*x^2]*(a + b*
ArcCot[c*x])^p)/(c^2*d*m), x] + (Dist[(b*f*p)/(c*m), Int[((f*x)^(m - 1)*(a
+ b*ArcCot[c*x])^(p - 1))/Sqrt[d + e*x^2], x], x] - Dist[(f^2*(m - 1))/(c^2
*m), Int[((f*x)^(m - 2)*(a + b*ArcCot[c*x])^p)/Sqrt[d + e*x^2], x], x]) /;
FreeQ[{a, b, c, d, e, f}, x] && EqQ[e, c^2*d] && GtQ[p, 0] && GtQ[m, 1]
```

Rule 5058

```
Int[((a_.) + ArcCot[(c_) + (d_.)*(x_)]*(b_.))^(p_.)*((e_.) + (f_.)*(x_))^(m
_.)*((A_.) + (B_.)*(x_) + (C_.)*(x_)^2)^(q_.), x_Symbol] :> Dist[1/d, Subst
[Int[((d*e - c*f)/d + (f*x)/d)^m*(C/d^2 + (C*x^2)/d^2)^q*(a + b*ArcCot[x])^
p, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C, m, p, q}, x] &&
```

```
EqQ[B*(1 + c^2) - 2*A*c*d, 0] && EqQ[2*c*C - B*d, 0]
```

Rubi steps

$$\int \frac{(a+bx)^2 \cot^{-1}(a+bx)}{\sqrt{1+a^2+2abx+b^2x^2}}\,dx = \frac{\text{Subst}\left(\int \frac{x^2\cot^{-1}(x)}{\sqrt{1+x^2}}\,dx, x, a+bx\right)}{b}$$

$$= \frac{(a+bx)\sqrt{1+(a+bx)^2}\,\cot^{-1}(a+bx)}{2b} + \frac{\text{Subst}\left(\int \frac{x}{\sqrt{1+x^2}}\,dx, x, a+bx\right)}{2b} - \frac{\text{Subst}\big(}{}$$

$$= \frac{\sqrt{1+(a+bx)^2}}{2b} + \frac{(a+bx)\sqrt{1+(a+bx)^2}\,\cot^{-1}(a+bx)}{2b} + \frac{i\cot^{-1}(a+bx)\tan^{-1}}{b}$$

Mathematica [A] time = 1.55, size = 202, normalized size = 1.08

$$-\frac{\sqrt{(a+bx)^2\left(\frac{1}{(a+bx)^2}+1\right)}\left(-4i\text{Li}_2\left(-e^{i\cot^{-1}(a+bx)}\right)+4i\text{Li}_2\left(e^{i\cot^{-1}(a+bx)}\right)-2\cot\left(\frac{1}{2}\cot^{-1}(a+bx)\right)-4\cot^{-1}(a+bx}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((a + b*x)^2*ArcCot[a + b*x])/Sqrt[1 + a^2 + 2*a*b*x + b^2*x^2],x
]
```

```
[Out] -1/8*(Sqrt[(a + b*x)^2*(1 + (a + b*x)^(-2))]*(-2*Cot[ArcCot[a + b*x]/2] - A
rcCot[a + b*x]*Csc[ArcCot[a + b*x]/2]^2 - 4*ArcCot[a + b*x]*Log[1 - E^(I*Ar
cCot[a + b*x])] + 4*ArcCot[a + b*x]*Log[1 + E^(I*ArcCot[a + b*x])] - (4*I)*
PolyLog[2, -E^(I*ArcCot[a + b*x])] + (4*I)*PolyLog[2, E^(I*ArcCot[a + b*x])
] + ArcCot[a + b*x]*Sec[ArcCot[a + b*x]/2]^2 - 2*Tan[ArcCot[a + b*x]/2]))/(
b*(a + b*x)*Sqrt[1 + (a + b*x)^(-2)])
```

fricas [F] time = 2.10, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(b^2x^2+2\,abx+a^2\right)\text{arccot}\left(bx+a\right)}{\sqrt{b^2x^2+2\,abx+a^2+1}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)^2*arccot(b*x+a)/(b^2*x^2+2*a*b*x+a^2+1)^(1/2),x, algorith
m="fricas")
```

```
[Out] integral((b^2*x^2 + 2*a*b*x + a^2)*arccot(b*x + a)/sqrt(b^2*x^2 + 2*a*b*x +
 a^2 + 1), x)
```

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

$$\int \frac{(bx+a)^2\,\text{arccot}\left(bx+a\right)}{\sqrt{b^2x^2+2\,abx+a^2+1}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)^2*arccot(b*x+a)/(b^2*x^2+2*a*b*x+a^2+1)^(1/2),x, algorith
m="giac")
```

```
[Out] integrate((b*x + a)^2*arccot(b*x + a)/sqrt(b^2*x^2 + 2*a*b*x + a^2 + 1), x)
```

maple [A] time = 2.63, size = 167, normalized size = 0.89

$$\frac{\left(\operatorname{arccot}\left(bx+a\right)xb+\operatorname{arccot}\left(bx+a\right)a+1\right)\sqrt{b^{2}x^{2}+2abx+a^{2}+1}}{2b}-\frac{\operatorname{arccot}\left(bx+a\right)\ln\left(1+\frac{bx+a+i}{\sqrt{1+\left(bx+a\right)^{2}}}\right)}{2b}+\frac{\operatorname{arcc}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)^2*arccot(b*x+a)/(b^2*x^2+2*a*b*x+a^2+1)^(1/2),x)
```

```
[Out] 1/2*(arccot(b*x+a)*x*b+arccot(b*x+a)*a+1)*(b^2*x^2+2*a*b*x+a^2+1)^(1/2)/b-1
/2/b*arccot(b*x+a)*ln(1+(I+a+b*x)/(1+(b*x+a)^2)^(1/2))+1/2/b*arccot(b*x+a)*
ln(1-(I+a+b*x)/(1+(b*x+a)^2)^(1/2))+1/2*I/b*polylog(2,-(I+a+b*x)/(1+(b*x+a)
^2)^(1/2))-1/2*I/b*polylog(2,(I+a+b*x)/(1+(b*x+a)^2)^(1/2))
```

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

$$\int\frac{\left(bx+a\right)^{2}\operatorname{arccot}\left(bx+a\right)}{\sqrt{b^{2}x^{2}+2\,abx+a^{2}+1}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)^2*arccot(b*x+a)/(b^2*x^2+2*a*b*x+a^2+1)^(1/2),x, algorith
m="maxima")
```

```
[Out] integrate((b*x + a)^2*arccot(b*x + a)/sqrt(b^2*x^2 + 2*a*b*x + a^2 + 1), x)
```

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

$$\int\frac{\operatorname{acot}\left(a+b\,x\right)\,\left(a+b\,x\right)^{2}}{\sqrt{a^{2}+2\,a\,b\,x+b^{2}\,x^{2}+1}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((acot(a + b*x)*(a + b*x)^2)/(a^2 + b^2*x^2 + 2*a*b*x + 1)^(1/2),x)
```

```
[Out] int((acot(a + b*x)*(a + b*x)^2)/(a^2 + b^2*x^2 + 2*a*b*x + 1)^(1/2), x)
```

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

$$\int\frac{\left(a+bx\right)^{2}\operatorname{acot}\left(a+bx\right)}{\sqrt{a^{2}+2abx+b^{2}x^{2}+1}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)**2*acot(b*x+a)/(b**2*x**2+2*a*b*x+a**2+1)**(1/2),x)
```

```
[Out] Integral((a + b*x)**2*acot(a + b*x)/sqrt(a**2 + 2*a*b*x + b**2*x**2 + 1), x
)
```

3.119 $\int \frac{(a+bx)^2 \cot^{-1}(a+bx)}{\sqrt{(1+a^2)c+2abcx+b^2cx^2}} dx$

Optimal. Leaf size=281

$$\frac{i\sqrt{(a+bx)^2+1}\,\text{Li}_2\left(-\frac{i\sqrt{i(a+bx)+1}}{\sqrt{1-i(a+bx)}}\right)}{2b\sqrt{c(a+bx)^2+c}}-\frac{i\sqrt{(a+bx)^2+1}\,\text{Li}_2\left(\frac{i\sqrt{i(a+bx)+1}}{\sqrt{1-i(a+bx)}}\right)}{2b\sqrt{c(a+bx)^2+c}}+\frac{\sqrt{c(a+bx)^2+c}}{2bc}+\frac{(a+bx)\sqrt{c(a+bx)^2+c}}{2bc}$$

```
[Out] I*arccot(b*x+a)*arctan((1+I*(b*x+a))^(1/2)/(1-I*(b*x+a))^(1/2))*(1+(b*x+a)^
2)^(1/2)/b/(c+c*(b*x+a)^2)^(1/2)+1/2*I*polylog(2,-I*(1+I*(b*x+a))^(1/2)/(1-
I*(b*x+a))^(1/2))*(1+(b*x+a)^2)^(1/2)/b/(c+c*(b*x+a)^2)^(1/2)-1/2*I*polylog
(2,I*(1+I*(b*x+a))^(1/2)/(1-I*(b*x+a))^(1/2))*(1+(b*x+a)^2)^(1/2)/b/(c+c*(b
*x+a)^2)^(1/2)+1/2*(c+c*(b*x+a)^2)^(1/2)/b/c+1/2*(b*x+a)*arccot(b*x+a)*(c+c
*(b*x+a)^2)^(1/2)/b/c
```

Rubi [A] time = 0.35, antiderivative size = 281, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125, Rules used = {5058, 4953, 261, 4891, 4887}

$$\frac{i\sqrt{(a+bx)^2+1}\,\text{PolyLog}\left(2,-\frac{i\sqrt{1+i(a+bx)}}{\sqrt{1-i(a+bx)}}\right)}{2b\sqrt{c(a+bx)^2+c}}-\frac{i\sqrt{(a+bx)^2+1}\,\text{PolyLog}\left(2,\frac{i\sqrt{1+i(a+bx)}}{\sqrt{1-i(a+bx)}}\right)}{2b\sqrt{c(a+bx)^2+c}}+\frac{\sqrt{c(a+bx)^2+c}}{2bc}+\frac{(a+bx)}{}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)^2*ArcCot[a + b*x])/Sqrt[(1 + a^2)*c + 2*a*b*c*x + b^2*c*x^2]
,x]
```

```
[Out] Sqrt[c + c*(a + b*x)^2]/(2*b*c) + ((a + b*x)*Sqrt[c + c*(a + b*x)^2]*ArcCot
[a + b*x])/(2*b*c) + (I*Sqrt[1 + (a + b*x)^2]*ArcCot[a + b*x]*ArcTan[Sqrt[1
 + I*(a + b*x)]/Sqrt[1 - I*(a + b*x)]])/(b*Sqrt[c + c*(a + b*x)^2]) + ((I/2
)*Sqrt[1 + (a + b*x)^2]*PolyLog[2, ((-I)*Sqrt[1 + I*(a + b*x)])/Sqrt[1 - I*
(a + b*x)]])/(b*Sqrt[c + c*(a + b*x)^2]) - ((I/2)*Sqrt[1 + (a + b*x)^2]*Pol
yLog[2, (I*Sqrt[1 + I*(a + b*x)])/Sqrt[1 - I*(a + b*x)]])/(b*Sqrt[c + c*(a
+ b*x)^2])
```

Rule 261

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

Rule 4887

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))/Sqrt[(d_) + (e_.)*(x_)^2], x_Symbol]
 :> Simp[(-2*I*(a + b*ArcCot[c*x])*ArcTan[Sqrt[1 + I*c*x]/Sqrt[1 - I*c*x]])
/(c*Sqrt[d]), x] + (-Simp[(I*b*PolyLog[2, -((I*Sqrt[1 + I*c*x])/Sqrt[1 - I*
c*x])])/(c*Sqrt[d]), x] + Simp[(I*b*PolyLog[2, (I*Sqrt[1 + I*c*x])/Sqrt[1 -
 I*c*x]])/(c*Sqrt[d]), x]) /; FreeQ[{a, b, c, d, e}, x] && EqQ[e, c^2*d] &&
 GtQ[d, 0]
```

Rule 4891

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)/Sqrt[(d_) + (e_.)*(x_)^2], x_S
ymbol] :> Dist[Sqrt[1 + c^2*x^2]/Sqrt[d + e*x^2], Int[(a + b*ArcCot[c*x])^p
/Sqrt[1 + c^2*x^2], x], x] /; FreeQ[{a, b, c, d, e}, x] && EqQ[e, c^2*d] &&
 IGtQ[p, 0] &&  !GtQ[d, 0]
```

Rule 4953

```
Int[(((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)*((f_.)*(x_))^(m_))/Sqrt[(d_)
+ (e_.)*(x_)^2], x_Symbol] :> Simp[(f*(f*x)^(m - 1)*Sqrt[d + e*x^2]*(a + b*
ArcCot[c*x])^p)/(c^2*d*m), x] + (Dist[(b*f*p)/(c*m), Int[((f*x)^(m - 1)*(a
+ b*ArcCot[c*x])^(p - 1))/Sqrt[d + e*x^2], x], x] - Dist[(f^2*(m - 1))/(c^2
*m), Int[((f*x)^(m - 2)*(a + b*ArcCot[c*x])^p)/Sqrt[d + e*x^2], x], x]) /;
FreeQ[{a, b, c, d, e, f}, x] && EqQ[e, c^2*d] && GtQ[p, 0] && GtQ[m, 1]
```

Rule 5058

```
Int[((a_.) + ArcCot[(c_) + (d_.)*(x_)]*(b_.))^(p_.)*((e_.) + (f_.)*(x_))^(m
_.)*((A_.) + (B_.)*(x_) + (C_.)*(x_)^2)^(q_.), x_Symbol] :> Dist[1/d, Subst
[Int[((d*e - c*f)/d + (f*x)/d)^m*(C/d^2 + (C*x^2)/d^2)^q*(a + b*ArcCot[x])^
p, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C, m, p, q}, x] &&
 EqQ[B*(1 + c^2) - 2*A*c*d, 0] && EqQ[2*c*C - B*d, 0]
```

Rubi steps

$$\int \frac{(a+bx)^2\cot^{-1}(a+bx)}{\sqrt{(1+a^2)c+2abcx+b^2cx^2}}dx = \frac{\text{Subst}\left(\int \frac{x^2\cot^{-1}(x)}{\sqrt{c+cx^2}}dx, x, a+bx\right)}{b}$$

$$= \frac{(a+bx)\sqrt{c+c(a+bx)^2}\cot^{-1}(a+bx)}{2bc} + \frac{\text{Subst}\left(\int \frac{x}{\sqrt{c+cx^2}}dx, x, a+bx\right)}{2b}$$

$$= \frac{\sqrt{c+c(a+bx)^2}}{2bc} + \frac{(a+bx)\sqrt{c+c(a+bx)^2}\cot^{-1}(a+bx)}{2bc} - \frac{\sqrt{1+(a+}}{}$$

$$= \frac{\sqrt{c+c(a+bx)^2}}{2bc} + \frac{(a+bx)\sqrt{c+c(a+bx)^2}\cot^{-1}(a+bx)}{2bc} + \frac{i\sqrt{1+(a+}}{}$$

Mathematica [A] time = 0.93, size = 207, normalized size = 0.74

$$-\frac{\sqrt{c\left(a^2+2abx+b^2x^2+1\right)}\left(-4i\text{Li}_2\left(-e^{i\cot^{-1}(a+bx)}\right)+4i\text{Li}_2\left(e^{i\cot^{-1}(a+bx)}\right)-2\cot\left(\frac{1}{2}\cot^{-1}(a+bx)\right)-4\cot^{-1}(a\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((a + b*x)^2*ArcCot[a + b*x])/Sqrt[(1 + a^2)*c + 2*a*b*c*x + b^2*
c*x^2],x]
```

```
[Out] -1/8*(Sqrt[c*(1 + a^2 + 2*a*b*x + b^2*x^2)]*(-2*Cot[ArcCot[a + b*x]/2] - Ar
cCot[a + b*x]*Csc[ArcCot[a + b*x]/2]^2 - 4*ArcCot[a + b*x]*Log[1 - E^(I*Arc
Cot[a + b*x])] + 4*ArcCot[a + b*x]*Log[1 + E^(I*ArcCot[a + b*x])] - (4*I)*P
olyLog[2, -E^(I*ArcCot[a + b*x])] + (4*I)*PolyLog[2, E^(I*ArcCot[a + b*x])]
 + ArcCot[a + b*x]*Sec[ArcCot[a + b*x]/2]^2 - 2*Tan[ArcCot[a + b*x]/2]))/(b
*c*(a + b*x)*Sqrt[1 + (a + b*x)^(-2)])
```

fricas [F] time = 1.09, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(b^2x^2+2\,abx+a^2\right)\text{arccot}\left(bx+a\right)}{\sqrt{b^2cx^2+2\,abcx+\left(a^2+1\right)c}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)^2*arccot(b*x+a)/((a^2+1)*c+2*a*b*c*x+c*x^2*b^2)^(1/2),x,
algorithm="fricas")
```

```
[Out] integral((b^2*x^2 + 2*a*b*x + a^2)*arccot(b*x + a)/sqrt(b^2*c*x^2 + 2*a*b*c
*x + (a^2 + 1)*c), x)
```

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

$$\int \frac{(bx+a)^2 \operatorname{arccot}(bx+a)}{\sqrt{b^2cx^2 + 2\,abcx + (a^2+1)c}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)^2*arccot(b*x+a)/((a^2+1)*c+2*a*b*c*x+c*x^2*b^2)^(1/2),x,
algorithm="giac")
```

```
[Out] integrate((b*x + a)^2*arccot(b*x + a)/sqrt(b^2*c*x^2 + 2*a*b*c*x + (a^2 + 1
)*c), x)
```

maple [A] time = 3.99, size = 202, normalized size = 0.72

$$\frac{(\operatorname{arccot}(bx+a)\,xb + \operatorname{arccot}(bx+a)\,a + 1)\sqrt{c\,(bx+a-i)\,(bx+a+i)}}{2bc} - \frac{i\left(i\ln\left(1-\frac{bx+a+i}{\sqrt{1+(bx+a)^2}}\right)\operatorname{arccot}(bx+a) - \right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)^2*arccot(b*x+a)/((a^2+1)*c+2*a*b*c*x+b^2*c*x^2)^(1/2),x)
```

```
[Out] 1/2*(arccot(b*x+a)*x*b+arccot(b*x+a)*a+1)*(c*(-I+a+b*x)*(I+a+b*x))^(1/2)/b/
c-1/2*I*(I*ln(1-(I+a+b*x)/(1+(b*x+a)^2)^(1/2))*arccot(b*x+a)-I*ln(1+(I+a+b*
x)/(1+(b*x+a)^2)^(1/2))*arccot(b*x+a)+polylog(2,(I+a+b*x)/(1+(b*x+a)^2)^(1/
2))-polylog(2,-(I+a+b*x)/(1+(b*x+a)^2)^(1/2)))*(c*(-I+a+b*x)*(I+a+b*x))^(1/
2)/(b^2*x^2+2*a*b*x+a^2+1)^(1/2)/b/c
```

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

$$\int \frac{(bx+a)^2 \operatorname{arccot}(bx+a)}{\sqrt{b^2cx^2 + 2\,abcx + (a^2+1)c}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)^2*arccot(b*x+a)/((a^2+1)*c+2*a*b*c*x+c*x^2*b^2)^(1/2),x,
algorithm="maxima")
```

```
[Out] integrate((b*x + a)^2*arccot(b*x + a)/sqrt(b^2*c*x^2 + 2*a*b*c*x + (a^2 + 1
)*c), x)
```

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

$$\int \frac{\operatorname{acot}(a+b\,x)\,(a+b\,x)^2}{\sqrt{c\,b^2\,x^2 + 2\,a\,c\,b\,x + c\,(a^2+1)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((acot(a + b*x)*(a + b*x)^2)/(c*(a^2 + 1) + b^2*c*x^2 + 2*a*b*c*x)^(1/2)
,x)
```

```
[Out] int((acot(a + b*x)*(a + b*x)^2)/(c*(a^2 + 1) + b^2*c*x^2 + 2*a*b*c*x)^(1/2)
, x)
```

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

$$\int \frac{(a+bx)^2 \operatorname{acot}(a+bx)}{\sqrt{c(a^2+2abx+b^2x^2+1)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)**2*acot(b*x+a)/((a**2+1)*c+2*a*b*c*x+c*x**2*b**2)**(1/2),
x)
```

```
[Out] Integral((a + b*x)**2*acot(a + b*x)/sqrt(c*(a**2 + 2*a*b*x + b**2*x**2 + 1)
), x)
```

3.120 $\int \frac{(a+bx)^2 \cot^{-1}(a+bx)}{\sqrt[3]{1+a^2+2abx+b^2x^2}} \, dx$

Optimal. Leaf size=30

$$\mathrm{Int}\left(\frac{(a+bx)^2 \cot^{-1}(a+bx)}{\sqrt[3]{(a+bx)^2+1}},x\right)$$

```
[Out] Unintegrable((b*x+a)^2*arccot(b*x+a)/(1+(b*x+a)^2)^(1/3),x)
```

Rubi [A] time = 0.14, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{(a+bx)^2 \cot^{-1}(a+bx)}{\sqrt[3]{1+a^2+2abx+b^2x^2}} \, dx$$

Verification is Not applicable to the result.

```
[In] Int[((a + b*x)^2*ArcCot[a + b*x])/(1 + a^2 + 2*a*b*x + b^2*x^2)^(1/3),x]
```

```
[Out] Defer[Subst][Defer[Int][(x^2*ArcCot[x])/(1 + x^2)^(1/3), x], x, a + b*x]/b
```

Rubi steps

$$\int \frac{(a+bx)^2 \cot^{-1}(a+bx)}{\sqrt[3]{1+a^2+2abx+b^2x^2}} \, dx = \frac{\mathrm{Subst}\left(\int \frac{x^2 \cot^{-1}(x)}{\sqrt[3]{1+x^2}} \, dx, x, a+bx\right)}{b}$$

Mathematica [A] time = 1.00, size = 198, normalized size = 6.60

$$\frac{3\left(5\sqrt[3]{2}\sqrt{\pi}\,\Gamma\left(\frac{5}{3}\right){}_3F_2\left(1,\frac{4}{3},\frac{4}{3};\frac{11}{6},\frac{7}{3};\frac{1}{a^2+2bxa+b^2x^2+1}\right)+\Gamma\left(\frac{11}{6}\right)\Gamma\left(\frac{7}{3}\right)\left(5\left((a+bx)^2+1\right)\left(3\left((a+bx)^2+7\right)+4(a+bx\right.\right.\right.}{140b\Gamma\left(\frac{11}{6}\right)\Gamma\left(\frac{7}{3}\right)\sqrt[3]{a^2+2abx+b^2x^2+1}}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((a + b*x)^2*ArcCot[a + b*x])/(1 + a^2 + 2*a*b*x + b^2*x^2)^(1/3)
,x]
```

```
[Out] (3*(Gamma[11/6]*Gamma[7/3]*(5*(1 + (a + b*x)^2)*(3*(7 + (a + b*x)^2) + 4*(a
 + b*x)*(-2 + (a + b*x)^2)*ArcCot[a + b*x]) - 24*(a + b*x)*ArcCot[a + b*x]*
Hypergeometric2F1[1, 4/3, 11/6, (1 + a^2 + 2*a*b*x + b^2*x^2)^(-1)]) + 5*2^
(1/3)*Sqrt[Pi]*Gamma[5/3]*HypergeometricPFQ[{1, 4/3, 4/3}, {11/6, 7/3}, (1
+ a^2 + 2*a*b*x + b^2*x^2)^(-1)]))/(140*b*(1 + a^2 + 2*a*b*x + b^2*x^2)^(1/
3)*(1 + (a + b*x)^2)*Gamma[11/6]*Gamma[7/3])
```

fricas [A] time = 0.57, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{\left(b^2x^2+2\,abx+a^2\right)\mathrm{arccot}\left(bx+a\right)}{\left(b^2x^2+2\,abx+a^2+1\right)^{\frac{1}{3}}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)^2*arccot(b*x+a)/(b^2*x^2+2*a*b*x+a^2+1)^(1/3),x, algorith
m="fricas")
```

```
[Out] integral((b^2*x^2 + 2*a*b*x + a^2)*arccot(b*x + a)/(b^2*x^2 + 2*a*b*x + a^2
 + 1)^(1/3), x)
```

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

$$\int \frac{(bx+a)^2 \operatorname{arccot}(bx+a)}{\left(b^2x^2+2\,abx+a^2+1\right)^{\frac{1}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)^2*arccot(b*x+a)/(b^2*x^2+2*a*b*x+a^2+1)^(1/3),x, algorith
m="giac")
```

```
[Out] integrate((b*x + a)^2*arccot(b*x + a)/(b^2*x^2 + 2*a*b*x + a^2 + 1)^(1/3),
x)
```

maple [A] time = 3.49, size = 0, normalized size = 0.00

$$\int \frac{(bx+a)^2 \operatorname{arccot}(bx+a)}{\left(b^2x^2+2abx+a^2+1\right)^{\frac{1}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)^2*arccot(b*x+a)/(b^2*x^2+2*a*b*x+a^2+1)^(1/3),x)
```

```
[Out] int((b*x+a)^2*arccot(b*x+a)/(b^2*x^2+2*a*b*x+a^2+1)^(1/3),x)
```

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

$$\int \frac{(bx+a)^2 \operatorname{arccot}(bx+a)}{\left(b^2x^2+2\,abx+a^2+1\right)^{\frac{1}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)^2*arccot(b*x+a)/(b^2*x^2+2*a*b*x+a^2+1)^(1/3),x, algorith
m="maxima")
```

```
[Out] integrate((b*x + a)^2*arccot(b*x + a)/(b^2*x^2 + 2*a*b*x + a^2 + 1)^(1/3),
x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\operatorname{acot}(a+b\,x)\,(a+b\,x)^2}{\left(a^2+2\,a\,b\,x+b^2\,x^2+1\right)^{1/3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((acot(a + b*x)*(a + b*x)^2)/(a^2 + b^2*x^2 + 2*a*b*x + 1)^(1/3),x)
```

```
[Out] int((acot(a + b*x)*(a + b*x)^2)/(a^2 + b^2*x^2 + 2*a*b*x + 1)^(1/3), x)
```

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

$$\int \frac{(a+bx)^2 \operatorname{acot}(a+bx)}{\sqrt[3]{a^2+2abx+b^2x^2+1}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)**2*acot(b*x+a)/(b**2*x**2+2*a*b*x+a**2+1)**(1/3),x)
```

```
[Out] Integral((a + b*x)**2*acot(a + b*x)/(a**2 + 2*a*b*x + b**2*x**2 + 1)**(1/3)
, x)
```

3.121 $\int \frac{(a+bx)^2 \cot^{-1}(a+bx)}{\sqrt[3]{\left(1+a^2\right)c+2abcx+b^2cx^2}}\,dx$

Optimal. Leaf size=32

$$\text{Int}\left(\frac{(a+bx)^2\cot^{-1}(a+bx)}{\sqrt[3]{c(a+bx)^2+c}},x\right)$$

```
[Out] Unintegrable((b*x+a)^2*arccot(b*x+a)/(c+c*(b*x+a)^2)^(1/3),x)
```

Rubi [A] time = 0.19, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{(a+bx)^2\cot^{-1}(a+bx)}{\sqrt[3]{\left(1+a^2\right)c+2abcx+b^2cx^2}}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[((a + b*x)^2*ArcCot[a + b*x])/((1 + a^2)*c + 2*a*b*c*x + b^2*c*x^2)^(1/3),x]
```

```
[Out] Defer[Subst][Defer[Int][(x^2*ArcCot[x])/(c + c*x^2)^(1/3), x], x, a + b*x]/b
```

Rubi steps

$$\int \frac{(a+bx)^2\cot^{-1}(a+bx)}{\sqrt[3]{\left(1+a^2\right)c+2abcx+b^2cx^2}}\,dx = \frac{\text{Subst}\left(\int \frac{x^2\cot^{-1}(x)}{\sqrt[3]{c+cx^2}}\,dx,x,a+bx\right)}{b}$$

Mathematica [A] time = 0.22, size = 200, normalized size = 6.25

$$\frac{3\left(5\sqrt[3]{2}\sqrt{\pi}\,\Gamma\left(\frac{5}{3}\right){}_3F_2\left(1,\frac{4}{3},\frac{4}{3};\frac{11}{6},\frac{7}{3};\frac{1}{a^2+2bxa+b^2x^2+1}\right)+\Gamma\left(\frac{11}{6}\right)\Gamma\left(\frac{7}{3}\right)\left(5\left((a+bx)^2+1\right)\left(3\left((a+bx)^2+7\right)+4(a+bx\right.\right.\right.}{140b\Gamma\left(\frac{11}{6}\right)\Gamma\left(\frac{7}{3}\right)\left((a+bx)^2+1\right)\sqrt[3]{c\left(a^2+\right.}}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((a + b*x)^2*ArcCot[a + b*x])/((1 + a^2)*c + 2*a*b*c*x + b^2*c*x^2)^(1/3),x]
```

```
[Out] (3*(Gamma[11/6]*Gamma[7/3]*(5*(1 + (a + b*x)^2)*(3*(7 + (a + b*x)^2) + 4*(a + b*x)*(-2 + (a + b*x)^2)*ArcCot[a + b*x]) - 24*(a + b*x)*ArcCot[a + b*x]*Hypergeometric2F1[1, 4/3, 11/6, (1 + a^2 + 2*a*b*x + b^2*x^2)^(-1)]) + 5*2^(1/3)*Sqrt[Pi]*Gamma[5/3]*HypergeometricPFQ[{1, 4/3, 4/3}, {11/6, 7/3}, (1 + a^2 + 2*a*b*x + b^2*x^2)^(-1)]))/(140*b*(c*(1 + a^2 + 2*a*b*x + b^2*x^2))^(1/3)*(1 + (a + b*x)^2)*Gamma[11/6]*Gamma[7/3])
```

fricas [A] time = 0.67, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(b^2x^2+2\,abx+a^2\right)\text{arccot}\left(bx+a\right)}{\left(b^2cx^2+2\,abcx+\left(a^2+1\right)c\right)^{\frac{1}{3}}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)^2*arccot(b*x+a)/((a^2+1)*c+2*a*b*c*x+c*x^2*b^2)^(1/3),x,
algorithm="fricas")
```

```
[Out] integral((b^2*x^2 + 2*a*b*x + a^2)*arccot(b*x + a)/(b^2*c*x^2 + 2*a*b*c*x +
 (a^2 + 1)*c)^(1/3), x)
```

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

$$\int \frac{(bx+a)^2 \operatorname{arccot}(bx+a)}{\left(b^2cx^2 + 2\,abcx + \left(a^2+1\right)c\right)^{\frac{1}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)^2*arccot(b*x+a)/((a^2+1)*c+2*a*b*c*x+c*x^2*b^2)^(1/3),x,
algorithm="giac")
```

```
[Out] integrate((b*x + a)^2*arccot(b*x + a)/(b^2*c*x^2 + 2*a*b*c*x + (a^2 + 1)*c)
^(1/3), x)
```

maple [A] time = 3.47, size = 0, normalized size = 0.00

$$\int \frac{(bx+a)^2 \operatorname{arccot}(bx+a)}{\left(\left(a^2+1\right)c + 2abcx + b^2c\,x^2\right)^{\frac{1}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)^2*arccot(b*x+a)/((a^2+1)*c+2*a*b*c*x+b^2*c*x^2)^(1/3),x)
```

```
[Out] int((b*x+a)^2*arccot(b*x+a)/((a^2+1)*c+2*a*b*c*x+b^2*c*x^2)^(1/3),x)
```

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

$$\int \frac{(bx+a)^2 \operatorname{arccot}(bx+a)}{\left(b^2cx^2 + 2\,abcx + \left(a^2+1\right)c\right)^{\frac{1}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)^2*arccot(b*x+a)/((a^2+1)*c+2*a*b*c*x+c*x^2*b^2)^(1/3),x,
algorithm="maxima")
```

```
[Out] integrate((b*x + a)^2*arccot(b*x + a)/(b^2*c*x^2 + 2*a*b*c*x + (a^2 + 1)*c)
^(1/3), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\operatorname{acot}(a+b\,x)\,\left(a+b\,x\right)^2}{\left(c\,b^2\,x^2 + 2\,a\,c\,b\,x + c\,\left(a^2+1\right)\right)^{1/3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((acot(a + b*x)*(a + b*x)^2)/(c*(a^2 + 1) + b^2*c*x^2 + 2*a*b*c*x)^(1/3)
,x)
```

```
[Out] int((acot(a + b*x)*(a + b*x)^2)/(c*(a^2 + 1) + b^2*c*x^2 + 2*a*b*c*x)^(1/3)
, x)
```

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

$$\int \frac{(a+bx)^2 \operatorname{acot}(a+bx)}{\sqrt[3]{c\left(a^2 + 2abx + b^2x^2 + 1\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)**2*acot(b*x+a)/((a**2+1)*c+2*a*b*c*x+c*x**2*b**2)**(1/3),
x)
```

```
[Out] Integral((a + b*x)**2*acot(a + b*x)/(c*(a**2 + 2*a*b*x + b**2*x**2 + 1))**(
1/3), x)
```

3.122 $\int (a+bx)^2 \cot^{-1}(a+bx)\,dx$

Optimal. Leaf size=52

$$\frac{(a+bx)^2}{6b}-\frac{\log\left((a+bx)^2+1\right)}{6b}+\frac{(a+bx)^3\cot^{-1}(a+bx)}{3b}$$

```
[Out] 1/6*(b*x+a)^2/b+1/3*(b*x+a)^3*arccot(b*x+a)/b-1/6*ln(1+(b*x+a)^2)/b
```

Rubi [A] time = 0.04, antiderivative size = 52, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.286, Rules used = {5044, 4853, 266, 43}

$$\frac{(a+bx)^2}{6b}-\frac{\log\left((a+bx)^2+1\right)}{6b}+\frac{(a+bx)^3\cot^{-1}(a+bx)}{3b}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)^2*ArcCot[a + b*x],x]
```

```
[Out] (a + b*x)^2/(6*b) + ((a + b*x)^3*ArcCot[a + b*x])/(3*b) - Log[1 + (a + b*x)
^2]/(6*b)
```

Rule 43

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

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 4853

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcCot[c*x])^p)/(d*(m + 1)), x] + Dist[(b*c*p
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcCot[c*x])^(p - 1))/(1 + c^2*x^2
), x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[p, 0] && (EqQ[p, 1] || Integ
erQ[m]) && NeQ[m, -1]
```

Rule 5044

```
Int[((a_.) + ArcCot[(c_) + (d_.)*(x_)]*(b_.))^(p_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((f*x)/d)^m*(a + b*ArcCot[x])^p, x],
x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[d*e - c*f, 0] &&
IGtQ[p, 0]
```

Rubi steps

$$\int (a+bx)^2 \cot^{-1}(a+bx)\,dx = \frac{\text{Subst}\left(\int x^2\cot^{-1}(x)\,dx, x, a+bx\right)}{b}$$
$$= \frac{(a+bx)^3\cot^{-1}(a+bx)}{3b} + \frac{\text{Subst}\left(\int \frac{x^3}{1+x^2}\,dx, x, a+bx\right)}{3b}$$
$$= \frac{(a+bx)^3\cot^{-1}(a+bx)}{3b} + \frac{\text{Subst}\left(\int \frac{x}{1+x}\,dx, x, (a+bx)^2\right)}{6b}$$
$$= \frac{(a+bx)^3\cot^{-1}(a+bx)}{3b} + \frac{\text{Subst}\left(\int \left(1+\frac{1}{-1-x}\right)dx, x, (a+bx)^2\right)}{6b}$$
$$= \frac{(a+bx)^2}{6b} + \frac{(a+bx)^3\cot^{-1}(a+bx)}{3b} - \frac{\log\left(1+(a+bx)^2\right)}{6b}$$

Mathematica [A] time = 0.01, size = 42, normalized size = 0.81

$$\frac{(a+bx)^2 - \log\left((a+bx)^2+1\right) + 2(a+bx)^3\cot^{-1}(a+bx)}{6b}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)^2*ArcCot[a + b*x],x]
```

```
[Out] ((a + b*x)^2 + 2*(a + b*x)^3*ArcCot[a + b*x] - Log[1 + (a + b*x)^2])/(6*b)
```

fricas [A] time = 0.55, size = 81, normalized size = 1.56

$$\frac{b^2x^2 - 2\,a^3\arctan(bx+a) + 2\,abx + 2\left(b^3x^3 + 3\,ab^2x^2 + 3\,a^2bx\right)\text{arccot}(bx+a) - \log\left(b^2x^2 + 2\,abx + a^2 + 1\right)}{6\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/6*(b^2*x^2 - 2*a^3*arctan(b*x + a) + 2*a*b*x + 2*(b^3*x^3 + 3*a*b^2*x^2 +
 3*a^2*b*x)*arccot(b*x + a) - log(b^2*x^2 + 2*a*b*x + a^2 + 1))/b
```

giac [B] time = 0.31, size = 203, normalized size = 3.90

$$-\frac{\arctan\left(\frac{1}{bx+a}\right)\tan\left(\frac{1}{2}\arctan\left(\frac{1}{bx+a}\right)\right)^6 - 3\arctan\left(\frac{1}{bx+a}\right)\tan\left(\frac{1}{2}\arctan\left(\frac{1}{bx+a}\right)\right)^4 - \tan\left(\frac{1}{2}\arctan\left(\frac{1}{bx+a}\right)\right)^5 - 4\,\text{lo}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/24*(arctan(1/(b*x + a))*tan(1/2*arctan(1/(b*x + a)))^6 - 3*arctan(1/(b*x
 + a))*tan(1/2*arctan(1/(b*x + a)))^4 - tan(1/2*arctan(1/(b*x + a)))^5 - 4*
log(16*tan(1/2*arctan(1/(b*x + a)))^2/(tan(1/2*arctan(1/(b*x + a)))^4 + 2*t
an(1/2*arctan(1/(b*x + a)))^2 + 1))*tan(1/2*arctan(1/(b*x + a)))^3 + 3*arct
an(1/(b*x + a))*tan(1/2*arctan(1/(b*x + a)))^2 - 2*tan(1/2*arctan(1/(b*x +
a)))^3 - arctan(1/(b*x + a)) - tan(1/2*arctan(1/(b*x + a))))/(b*tan(1/2*arc
tan(1/(b*x + a)))^3)
```

maple [A] time = 0.04, size = 86, normalized size = 1.65

$$\frac{b^2\operatorname{arccot}(bx+a)\,x^3}{3}+b\operatorname{arccot}(bx+a)\,x^2a+\operatorname{arccot}(bx+a)\,x\,a^2+\frac{\operatorname{arccot}(bx+a)\,a^3}{3b}+\frac{b\,x^2}{6}+\frac{ax}{3}+\frac{a^2}{6b}-\frac{\ln\left(1+(b\right.}{6b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)^2*arccot(b*x+a),x)
```

```
[Out] 1/3*b^2*arccot(b*x+a)*x^3+b*arccot(b*x+a)*x^2*a+arccot(b*x+a)*x*a^2+1/3/b*a
rccot(b*x+a)*a^3+1/6*b*x^2+1/3*a*x+1/6/b*a^2-1/6*ln(1+(b*x+a)^2)/b
```

maxima [B] time = 0.43, size = 93, normalized size = 1.79

$$-\frac{1}{6}\left(\frac{2\,a^3\arctan\left(\frac{b^2x+ab}{b}\right)}{b^2}-\frac{bx^2+2\,ax}{b}+\frac{\log\left(b^2x^2+2\,abx+a^2+1\right)}{b^2}\right)b+\frac{1}{3}\left(b^2x^3+3\,abx^2+3\,a^2x\right)\operatorname{arccot}(bx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/6*(2*a^3*arctan((b^2*x + a*b)/b)/b^2 - (b*x^2 + 2*a*x)/b + log(b^2*x^2 +
 2*a*b*x + a^2 + 1)/b^2)*b + 1/3*(b^2*x^3 + 3*a*b*x^2 + 3*a^2*x)*arccot(b*x
 + a)
```

mupad [B] time = 0.15, size = 85, normalized size = 1.63

$$\frac{a\,x}{3}-\frac{\ln\left(a^2+2\,a\,b\,x+b^2\,x^2+1\right)}{6\,b}+\frac{b\,x^2}{6}-\frac{a^3\,\mathrm{atan}\left(a+b\,x\right)}{3\,b}+\frac{b^2\,x^3\,\mathrm{acot}\left(a+b\,x\right)}{3}+a^2\,x\,\mathrm{acot}\left(a+b\,x\right)+a\,b\,x^2\,\mathrm{acot}\left(\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(acot(a + b*x)*(a + b*x)^2,x)
```

```
[Out] (a*x)/3 - log(a^2 + b^2*x^2 + 2*a*b*x + 1)/(6*b) + (b*x^2)/6 - (a^3*atan(a
+ b*x))/(3*b) + (b^2*x^3*acot(a + b*x))/3 + a^2*x*acot(a + b*x) + a*b*x^2*a
cot(a + b*x)
```

sympy [A] time = 2.91, size = 99, normalized size = 1.90

$$\begin{cases}\frac{a^3\,\mathrm{acot}\,(a+bx)}{3b}+a^2x\,\mathrm{acot}\,(a+bx)+abx^2\,\mathrm{acot}\,(a+bx)+\frac{ax}{3}+\frac{b^2x^3\,\mathrm{acot}\,(a+bx)}{3}+\frac{bx^2}{6}-\frac{\log\left(\frac{a}{b}+x-\frac{i}{b}\right)}{3b}-\frac{i\,\mathrm{acot}\,(a+bx)}{3b} & \text{fo} \\ a^2x\,\mathrm{acot}\,(a) & \text{ot}\end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)**2*acot(b*x+a),x)
```

```
[Out] Piecewise((a**3*acot(a + b*x)/(3*b) + a**2*x*acot(a + b*x) + a*b*x**2*acot(
a + b*x) + a*x/3 + b**2*x**3*acot(a + b*x)/3 + b*x**2/6 - log(a/b + x - I/b
)/(3*b) - I*acot(a + b*x)/(3*b), Ne(b, 0)), (a**2*x*acot(a), True))
```

3.123 $\int (a+bx)\cot^{-1}(a+bx)\,dx$

Optimal. Leaf size=39

$$-\frac{\tan^{-1}(a+bx)}{2b}+\frac{(a+bx)^2\cot^{-1}(a+bx)}{2b}+\frac{x}{2}$$

[Out] 1/2*x+1/2*(b*x+a)^2*arccot(b*x+a)/b-1/2*arctan(b*x+a)/b

Rubi [A] time = 0.02, antiderivative size = 39, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333, Rules used = {5044, 4853, 321, 203}

$$-\frac{\tan^{-1}(a+bx)}{2b}+\frac{(a+bx)^2\cot^{-1}(a+bx)}{2b}+\frac{x}{2}$$

Antiderivative was successfully verified.

[In] Int[(a + b*x)*ArcCot[a + b*x],x]

[Out] x/2 + ((a + b*x)^2*ArcCot[a + b*x])/(2*b) - ArcTan[a + b*x]/(2*b)

Rule 203

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

Rule 321

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

Rule 4853

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcCot[c*x])^p)/(d*(m + 1)), x] + Dist[(b*c*p
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcCot[c*x])^(p - 1))/(1 + c^2*x^2
), x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[p, 0] && (EqQ[p, 1] || Integ
erQ[m]) && NeQ[m, -1]
```

Rule 5044

```
Int[((a_.) + ArcCot[(c_) + (d_.)*(x_)]*(b_.))^(p_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((f*x)/d)^m*(a + b*ArcCot[x])^p, x],
x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[d*e - c*f, 0] &&
IGtQ[p, 0]
```

Rubi steps

$$\int (a+bx)\cot^{-1}(a+bx)\,dx = \frac{\text{Subst}\left(\int x\cot^{-1}(x)\,dx, x, a+bx\right)}{b}$$
$$= \frac{(a+bx)^2\cot^{-1}(a+bx)}{2b} + \frac{\text{Subst}\left(\int \frac{x^2}{1+x^2}\,dx, x, a+bx\right)}{2b}$$
$$= \frac{x}{2} + \frac{(a+bx)^2\cot^{-1}(a+bx)}{2b} - \frac{\text{Subst}\left(\int \frac{1}{1+x^2}\,dx, x, a+bx\right)}{2b}$$
$$= \frac{x}{2} + \frac{(a+bx)^2\cot^{-1}(a+bx)}{2b} - \frac{\tan^{-1}(a+bx)}{2b}$$

Mathematica [C] time = 0.06, size = 141, normalized size = 3.62

$$\frac{a\left(\log\left(a^2+2abx+b^2x^2+1\right)-2a\tan^{-1}(a+bx)\right)}{2b}+\frac{1}{2}b\left(-\frac{i(-a+i)^2\log(-a-bx+i)}{2b^2}+\frac{i(a+i)^2\log(a+bx+i}{2b^2}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*ArcCot[a + b*x],x]
```

```
[Out] a*x*ArcCot[a + b*x] + (b*(-(a/b) + (a + b*x)/b)^2*ArcCot[a + b*x])/2 + (b*(
x/b - ((I/2)*(I - a)^2*Log[I - a - b*x])/b^2 + ((I/2)*(I + a)^2*Log[I + a +
 b*x])/b^2))/2 + (a*(-2*a*ArcTan[a + b*x] + Log[1 + a^2 + 2*a*b*x + b^2*x^2
]))/(2*b)
```

fricas [A] time = 0.52, size = 33, normalized size = 0.85

$$\frac{bx+\left(b^2x^2+2\,abx+a^2+1\right)\operatorname{arccot}(bx+a)}{2\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*arccot(b*x+a),x, algorithm="fricas")
```

```
[Out] 1/2*(b*x + (b^2*x^2 + 2*a*b*x + a^2 + 1)*arccot(b*x + a))/b
```

giac [B] time = 0.18, size = 100, normalized size = 2.56

$$\frac{\arctan\left(\frac{1}{bx+a}\right)\tan\left(\frac{1}{2}\,\arctan\left(\frac{1}{bx+a}\right)\right)^4+2\,\arctan\left(\frac{1}{bx+a}\right)\tan\left(\frac{1}{2}\,\arctan\left(\frac{1}{bx+a}\right)\right)^2-2\,\tan\left(\frac{1}{2}\,\arctan\left(\frac{1}{bx+a}\right)\right)^3+}{8\,b\tan\left(\frac{1}{2}\,\arctan\left(\frac{1}{bx+a}\right)\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*arccot(b*x+a),x, algorithm="giac")
```

```
[Out] 1/8*(arctan(1/(b*x + a))*tan(1/2*arctan(1/(b*x + a)))^4 + 2*arctan(1/(b*x +
 a))*tan(1/2*arctan(1/(b*x + a)))^2 - 2*tan(1/2*arctan(1/(b*x + a)))^3 + ar
ctan(1/(b*x + a)) + 2*tan(1/2*arctan(1/(b*x + a))))/(b*tan(1/2*arctan(1/(b*
x + a)))^2)
```

maple [A] time = 0.04, size = 57, normalized size = 1.46

$$\frac{b\operatorname{arccot}(bx+a)\,x^2}{2}+\operatorname{arccot}(bx+a)\,xa+\frac{\operatorname{arccot}(bx+a)\,a^2}{2b}+\frac{x}{2}+\frac{a}{2b}-\frac{\arctan(bx+a)}{2b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*arccot(b*x+a),x)
```

```
[Out] 1/2*b*arccot(b*x+a)*x^2+arccot(b*x+a)*x*a+1/2/b*arccot(b*x+a)*a^2+1/2*x+1/2
*a/b-1/2*arctan(b*x+a)/b
```

maxima [A] time = 0.43, size = 52, normalized size = 1.33

$$\frac{1}{2}\,b\left(\frac{x}{b}-\frac{\left(a^2+1\right)\arctan\left(\frac{b^2x+ab}{b}\right)}{b^2}\right)+\frac{1}{2}\left(bx^2+2\,ax\right)\operatorname{arccot}\left(bx+a\right)$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/2*b*(x/b - (a^2 + 1)*arctan((b^2*x + a*b)/b)/b^2) + 1/2*(b*x^2 + 2*a*x)*a
rccot(b*x + a)
```

mupad [B] time = 1.51, size = 49, normalized size = 1.26

$$\frac{x}{2}+\frac{\frac{\operatorname{acot}(a+b\,x)}{2}+\frac{a^2\operatorname{acot}(a+b\,x)}{2}}{b}+a\,x\operatorname{acot}\left(a+b\,x\right)+\frac{b\,x^2\operatorname{acot}\left(a+b\,x\right)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(acot(a + b*x)*(a + b*x),x)
```

```
[Out] x/2 + (acot(a + b*x)/2 + (a^2*acot(a + b*x))/2)/b + a*x*acot(a + b*x) + (b*
x^2*acot(a + b*x))/2
```

sympy [A] time = 1.77, size = 56, normalized size = 1.44

$$\begin{cases} \frac{a^2\operatorname{acot}(a+bx)}{2b}+ax\operatorname{acot}\left(a+bx\right)+\frac{bx^2\operatorname{acot}(a+bx)}{2}+\frac{x}{2}+\frac{\operatorname{acot}(a+bx)}{2b} & \text{for}\ b\neq 0\\ ax\operatorname{acot}\left(a\right) & \text{otherwise}\end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*acot(b*x+a),x)
```

```
[Out] Piecewise((a**2*acot(a + b*x)/(2*b) + a*x*acot(a + b*x) + b*x**2*acot(a + b
*x)/2 + x/2 + acot(a + b*x)/(2*b), Ne(b, 0)), (a*x*acot(a), True))
```

3.124 $\int \frac{\cot^{-1}(a+bx)}{a+bx} \, dx$

Optimal. Leaf size=45

$$\frac{i\text{Li}_2\left(\frac{i}{a+bx}\right)}{2b}-\frac{i\text{Li}_2\left(-\frac{i}{a+bx}\right)}{2b}$$

```
[Out] -1/2*I*polylog(2,-I/(b*x+a))/b+1/2*I*polylog(2,I/(b*x+a))/b
```

Rubi [A] time = 0.04, antiderivative size = 45, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.214, Rules used = {5044, 4849, 2391}

$$\frac{i\text{PolyLog}\left(2,\frac{i}{a+bx}\right)}{2b}-\frac{i\text{PolyLog}\left(2,-\frac{i}{a+bx}\right)}{2b}$$

Antiderivative was successfully verified.

```
[In] Int[ArcCot[a + b*x]/(a + b*x),x]
```

```
[Out] ((-I/2)*PolyLog[2, (-I)/(a + b*x)])/b + ((I/2)*PolyLog[2, I/(a + b*x)])/b
```

Rule 2391

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

Rule 4849

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))/(x_), x_Symbol] :> Simp[a*Log[x], x]
 + (Dist[(I*b)/2, Int[Log[1 - I/(c*x)]/x, x], x] - Dist[(I*b)/2, Int[Log[1
+ I/(c*x)]/x, x], x]) /; FreeQ[{a, b, c}, x]
```

Rule 5044

```
Int[((a_.) + ArcCot[(c_) + (d_.)*(x_)]*(b_.))^(p_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((f*x)/d)^m*(a + b*ArcCot[x])^p, x],
x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[d*e - c*f, 0] &&
IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{\cot^{-1}(a+bx)}{a+bx}\,dx &= \frac{\text{Subst}\left(\int \frac{\cot^{-1}(x)}{x}\,dx,x,a+bx\right)}{b}\\ &= \frac{i\,\text{Subst}\left(\int \frac{\log\left(1-\frac{i}{x}\right)}{x}\,dx,x,a+bx\right)}{2b}-\frac{i\,\text{Subst}\left(\int \frac{\log\left(1+\frac{i}{x}\right)}{x}\,dx,x,a+bx\right)}{2b}\\ &= -\frac{i\text{Li}_2\left(-\frac{i}{a+bx}\right)}{2b}+\frac{i\text{Li}_2\left(\frac{i}{a+bx}\right)}{2b}\end{aligned}$$

Mathematica [A] time = 0.01, size = 38, normalized size = 0.84

$$-\frac{i\left(\text{Li}_2\left(-\frac{i}{a+bx}\right)-\text{Li}_2\left(\frac{i}{a+bx}\right)\right)}{2b}$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcCot[a + b*x]/(a + b*x),x]
```

```
[Out] ((-1/2*I)*(PolyLog[2, (-I)/(a + b*x)] - PolyLog[2, I/(a + b*x)]))/b
```

fricas [F] time = 0.61, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\operatorname{arccot}(bx+a)}{bx+a}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integral(arccot(b*x + a)/(b*x + a), x)
```

giac [B] time = 0.55, size = 100, normalized size = 2.22

$$-\frac{\arctan\left(\frac{1}{bx+a}\right)\tan\left(\frac{1}{2}\arctan\left(\frac{1}{bx+a}\right)\right)^4+2\arctan\left(\frac{1}{bx+a}\right)\tan\left(\frac{1}{2}\arctan\left(\frac{1}{bx+a}\right)\right)^2-2\tan\left(\frac{1}{2}\arctan\left(\frac{1}{bx+a}\right)\right)^3+a}{8\,b^2\tan\left(\frac{1}{2}\arctan\left(\frac{1}{bx+a}\right)\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/8*(arctan(1/(b*x + a))*tan(1/2*arctan(1/(b*x + a)))^4 + 2*arctan(1/(b*x
+ a))*tan(1/2*arctan(1/(b*x + a)))^2 - 2*tan(1/2*arctan(1/(b*x + a)))^3 + a
rctan(1/(b*x + a)) + 2*tan(1/2*arctan(1/(b*x + a))))/(b^2*tan(1/2*arctan(1/
(b*x + a)))^2)
```

maple [B] time = 0.06, size = 98, normalized size = 2.18

$$\frac{\ln(bx+a)\operatorname{arccot}(bx+a)}{b}-\frac{i\ln(bx+a)\ln(1+i(bx+a))}{2b}+\frac{i\ln(bx+a)\ln(1-i(bx+a))}{2b}-\frac{i\operatorname{dilog}(1+i(bx+a))}{2b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arccot(b*x+a)/(b*x+a),x)
```

```
[Out] 1/b*ln(b*x+a)*arccot(b*x+a)-1/2*I/b*ln(b*x+a)*ln(1+I*(b*x+a))+1/2*I/b*ln(b*
x+a)*ln(1-I*(b*x+a))-1/2*I/b*dilog(1+I*(b*x+a))+1/2*I/b*dilog(1-I*(b*x+a))
```

maxima [B] time = 0.48, size = 112, normalized size = 2.49

$$\frac{\operatorname{arccot}(bx+a)\log(bx+a)}{b}+\frac{\arctan\left(\frac{b^2x+ab}{b}\right)\log(bx+a)}{b}+\frac{\arctan(bx+a,0)\log\left(b^2x^2+2\,abx+a^2+1\right)-2\,\text{arc}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] arccot(b*x + a)*log(b*x + a)/b + arctan((b^2*x + a*b)/b)*log(b*x + a)/b + 1
/2*(arctan2(b*x + a, 0)*log(b^2*x^2 + 2*a*b*x + a^2 + 1) - 2*arctan(b*x + a
)*log(abs(b*x + a)) + I*dilog(I*b*x + I*a + 1) - I*dilog(-I*b*x - I*a + 1))
/b
```

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

$$\int \frac{\operatorname{acot}(a+b\,x)}{a+b\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(acot(a + b*x)/(a + b*x),x)
```

```
[Out] int(acot(a + b*x)/(a + b*x), x)
```

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

$$\int \frac{\operatorname{acot}(a+bx)}{a+bx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(acot(b*x+a)/(b*x+a),x)
```

```
[Out] Integral(acot(a + b*x)/(a + b*x), x)
```

3.125 $\int \frac{\cot^{-1}(a+bx)}{(a+bx)^2} dx$

Optimal. Leaf size=47

$$-\frac{\log(a+bx)}{b}+\frac{\log\left((a+bx)^2+1\right)}{2b}-\frac{\cot^{-1}(a+bx)}{b(a+bx)}$$

```
[Out] -arccot(b*x+a)/b/(b*x+a)-ln(b*x+a)/b+1/2*ln(1+(b*x+a)^2)/b
```

Rubi [A] time = 0.03, antiderivative size = 47, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.429, Rules used = {5044, 4853, 266, 36, 29, 31}

$$-\frac{\log(a+bx)}{b}+\frac{\log\left((a+bx)^2+1\right)}{2b}-\frac{\cot^{-1}(a+bx)}{b(a+bx)}$$

Antiderivative was successfully verified.

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

```
[Out] -(ArcCot[a + b*x]/(b*(a + b*x))) - Log[a + b*x]/b + Log[1 + (a + b*x)^2]/(2
*b)
```

Rule 29

```
Int[(x_)^(-1), x_Symbol] :> Simp[Log[x], x]
```

Rule 31

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

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
 x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 4853

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcCot[c*x])^p)/(d*(m + 1)), x] + Dist[(b*c*p
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcCot[c*x])^(p - 1))/(1 + c^2*x^2
), x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[p, 0] && (EqQ[p, 1] || Integ
erQ[m]) && NeQ[m, -1]
```

Rule 5044

```
Int[((a_.) + ArcCot[(c_) + (d_.)*(x_)]*(b_.))^(p_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((f*x)/d)^m*(a + b*ArcCot[x])^p, x],
x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[d*e - c*f, 0] &&
IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{\cot^{-1}(a+bx)}{(a+bx)^2}\,dx &= \frac{\text{Subst}\left(\int \frac{\cot^{-1}(x)}{x^2}\,dx, x, a+bx\right)}{b}\\
&= -\frac{\cot^{-1}(a+bx)}{b(a+bx)} - \frac{\text{Subst}\left(\int \frac{1}{x(1+x^2)}\,dx, x, a+bx\right)}{b}\\
&= -\frac{\cot^{-1}(a+bx)}{b(a+bx)} - \frac{\text{Subst}\left(\int \frac{1}{x(1+x)}\,dx, x, (a+bx)^2\right)}{2b}\\
&= -\frac{\cot^{-1}(a+bx)}{b(a+bx)} - \frac{\text{Subst}\left(\int \frac{1}{x}\,dx, x, (a+bx)^2\right)}{2b} + \frac{\text{Subst}\left(\int \frac{1}{1+x}\,dx, x, (a+bx)^2\right)}{2b}\\
&= -\frac{\cot^{-1}(a+bx)}{b(a+bx)} - \frac{\log(a+bx)}{b} + \frac{\log\left(1+(a+bx)^2\right)}{2b}
\end{aligned}$$

Mathematica [A] time = 0.02, size = 40, normalized size = 0.85

$$-\frac{\log(a+bx) - \frac{1}{2}\log\left((a+bx)^2+1\right) + \frac{\cot^{-1}(a+bx)}{a+bx}}{b}$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcCot[a + b*x]/(a + b*x)^2,x]
[Out] -((ArcCot[a + b*x]/(a + b*x) + Log[a + b*x] - Log[1 + (a + b*x)^2]/2)/b)
```

fricas [A] time = 0.56, size = 59, normalized size = 1.26

$$\frac{(bx+a)\log\left(b^2x^2+2\,abx+a^2+1\right) - 2\,(bx+a)\log(bx+a) - 2\,\operatorname{arccot}(bx+a)}{2\left(b^2x+ab\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(b*x+a)/(b*x+a)^2,x, algorithm="fricas")
[Out] 1/2*((b*x + a)*log(b^2*x^2 + 2*a*b*x + a^2 + 1) - 2*(b*x + a)*log(b*x + a)
- 2*arccot(b*x + a))/(b^2*x + a*b)
```

giac [B] time = 0.17, size = 238, normalized size = 5.06

$$-\frac{\arctan\left(\frac{1}{bx+a}\right)^2 - \frac{\arctan\left(\frac{1}{bx+a}\right)^2\tan\left(\frac{1}{2}\arctan\left(\frac{1}{bx+a}\right)\right)^2 - \log\left(\frac{4\left(\tan\left(\frac{1}{2}\arctan\left(\frac{1}{bx+a}\right)\right)^4 - 2\tan\left(\frac{1}{2}\arctan\left(\frac{1}{bx+a}\right)\right)^2+1\right)}{\tan\left(\frac{1}{2}\arctan\left(\frac{1}{bx+a}\right)\right)^4 + 2\tan\left(\frac{1}{2}\arctan\left(\frac{1}{bx+a}\right)\right)^2+1}\right)\tan\left(\frac{1}{2}\arctan\left(\frac{1}{bx+a}\right)\right)^2 - \text{ar}\cdots}{\tan\left(\frac{1}{2}\arctan\left(\frac{1}{bx+a}\right.\cdots}}{2\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(b*x+a)/(b*x+a)^2,x, algorithm="giac")
[Out] -1/2*(arctan(1/(b*x + a))^2 - (arctan(1/(b*x + a))^2*tan(1/2*arctan(1/(b*x
+ a)))^2 - log(4*(tan(1/2*arctan(1/(b*x + a)))^4 - 2*tan(1/2*arctan(1/(b*x
+ a)))^2 + 1)/(tan(1/2*arctan(1/(b*x + a)))^4 + 2*tan(1/2*arctan(1/(b*x + a
)))^2 + 1))*tan(1/2*arctan(1/(b*x + a)))^2 - arctan(1/(b*x + a))^2 + 4*arct
```

```
an(1/(b*x + a))*tan(1/2*arctan(1/(b*x + a))) + log(4*(tan(1/2*arctan(1/(b*x
 + a)))^4 - 2*tan(1/2*arctan(1/(b*x + a)))^2 + 1)/(tan(1/2*arctan(1/(b*x +
a)))^4 + 2*tan(1/2*arctan(1/(b*x + a)))^2 + 1)))/(tan(1/2*arctan(1/(b*x + a
)))^2 - 1))/b
```

maple [A] time = 0.05, size = 46, normalized size = 0.98

$$-\frac{\operatorname{arccot}(bx+a)}{b(bx+a)}-\frac{\ln(bx+a)}{b}+\frac{\ln\left(1+(bx+a)^2\right)}{2b}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -arccot(b*x+a)/b/(b*x+a)-ln(b*x+a)/b+1/2*ln(1+(b*x+a)^2)/b
```

maxima [A] time = 0.32, size = 53, normalized size = 1.13

$$\frac{\log\left(b^2x^2+2\,abx+a^2+1\right)}{2\,b}-\frac{\log(bx+a)}{b}-\frac{\operatorname{arccot}(bx+a)}{(bx+a)b}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/2*log(b^2*x^2 + 2*a*b*x + a^2 + 1)/b - log(b*x + a)/b - arccot(b*x + a)/(
(b*x + a)*b)
```

mupad [B] time = 0.77, size = 57, normalized size = 1.21

$$\frac{\ln\left(-a^2-2\,a\,b\,x-b^2\,x^2-1\right)}{2\,b}-\frac{\ln(a+b\,x)}{b}-\frac{\operatorname{acot}(a+b\,x)}{x\,b^2+a\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] log(- a^2 - b^2*x^2 - 2*a*b*x - 1)/(2*b) - log(a + b*x)/b - acot(a + b*x)/(
a*b + b^2*x)
```

sympy [A] time = 6.14, size = 151, normalized size = 3.21

$$\begin{cases} \frac{a\log\left(\frac{a}{b}+x\right)}{-ab-b^2x}-\frac{a\log\left(\frac{a}{b}+x-\frac{i}{b}\right)}{-ab-b^2x}-\frac{ia\operatorname{acot}(a+bx)}{-ab-b^2x}+\frac{bx\log\left(\frac{a}{b}+x\right)}{-ab-b^2x}-\frac{bx\log\left(\frac{a}{b}+x-\frac{i}{b}\right)}{-ab-b^2x}-\frac{ibx\operatorname{acot}(a+bx)}{-ab-b^2x}+\frac{\operatorname{acot}(a+bx)}{-ab-b^2x} & \text{for } b\neq 0 \\ \frac{x\operatorname{acot}(a)}{a^2} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(acot(b*x+a)/(b*x+a)**2,x)
```

```
[Out] Piecewise((a*log(a/b + x)/(-a*b - b**2*x) - a*log(a/b + x - I/b)/(-a*b - b*
*2*x) - I*a*acot(a + b*x)/(-a*b - b**2*x) + b*x*log(a/b + x)/(-a*b - b**2*x
) - b*x*log(a/b + x - I/b)/(-a*b - b**2*x) - I*b*x*acot(a + b*x)/(-a*b - b*
*2*x) + acot(a + b*x)/(-a*b - b**2*x), Ne(b, 0)), (x*acot(a)/a**2, True))
```

3.126 $\int \frac{\cot^{-1}(1+x)}{2+2x} dx$

Optimal. Leaf size=35

$$\frac{1}{4} i \text{Li}_2\left(\frac{i}{x+1}\right) - \frac{1}{4} i \text{Li}_2\left(-\frac{i}{x+1}\right)$$

```
[Out] -1/4*I*polylog(2,-I/(1+x))+1/4*I*polylog(2,I/(1+x))
```

Rubi [A] time = 0.04, antiderivative size = 35, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333, Rules used = {5044, 12, 4849, 2391}

$$\frac{1}{4} i \text{PolyLog}\left(2, \frac{i}{x+1}\right) - \frac{1}{4} i \text{PolyLog}\left(2, -\frac{i}{x+1}\right)$$

Antiderivative was successfully verified.

```
[In] Int[ArcCot[1 + x]/(2 + 2*x),x]
```

```
[Out] (-I/4)*PolyLog[2, (-I)/(1 + x)] + (I/4)*PolyLog[2, I/(1 + x)]
```

Rule 12

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

Rule 2391

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

Rule 4849

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))/(x_), x_Symbol] :> Simp[a*Log[x], x]
 + (Dist[(I*b)/2, Int[Log[1 - I/(c*x)]/x, x], x] - Dist[(I*b)/2, Int[Log[1
+ I/(c*x)]/x, x], x]) /; FreeQ[{a, b, c}, x]
```

Rule 5044

```
Int[((a_.) + ArcCot[(c_) + (d_.)*(x_)]*(b_.))^(p_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((f*x)/d)^m*(a + b*ArcCot[x])^p, x],
x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[d*e - c*f, 0] &&
IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{\cot^{-1}(1+x)}{2+2x} dx &= \text{Subst}\left(\int \frac{\cot^{-1}(x)}{2x} dx, x, 1+x\right) \\
&= \frac{1}{2} \text{Subst}\left(\int \frac{\cot^{-1}(x)}{x} dx, x, 1+x\right) \\
&= \frac{1}{4} i \,\text{Subst}\left(\int \frac{\log\left(1-\frac{i}{x}\right)}{x} dx, x, 1+x\right) - \frac{1}{4} i \,\text{Subst}\left(\int \frac{\log\left(1+\frac{i}{x}\right)}{x} dx, x, 1+x\right) \\
&= -\frac{1}{4} i \text{Li}_2\left(-\frac{i}{1+x}\right) + \frac{1}{4} i \text{Li}_2\left(\frac{i}{1+x}\right)
\end{aligned}$$

Mathematica [A] time = 0.01, size = 35, normalized size = 1.00

$$\frac{1}{4}i\text{Li}_2\left(\frac{i}{x+1}\right)-\frac{1}{4}i\text{Li}_2\left(-\frac{i}{x+1}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcCot[1 + x]/(2 + 2*x),x]
[Out] (-1/4*I)*PolyLog[2, (-I)/(1 + x)] + (I/4)*PolyLog[2, I/(1 + x)]
```

fricas [F] time = 2.08, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\text{arccot}\,(x+1)}{2\,(x+1)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(1+x)/(2+2*x),x, algorithm="fricas")
[Out] integral(1/2*arccot(x + 1)/(x + 1), x)
```

giac [A] time = 0.16, size = 26, normalized size = 0.74

$$-\frac{1}{4}\,(x+1)^2\arctan\left(\frac{1}{x+1}\right)-\frac{1}{4}\,x-\frac{1}{4}\,\arctan\left(\frac{1}{x+1}\right)-\frac{1}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(1+x)/(2+2*x),x, algorithm="giac")
[Out] -1/4*(x + 1)^2*arctan(1/(x + 1)) - 1/4*x - 1/4*arctan(1/(x + 1)) - 1/4
```

maple [B] time = 0.06, size = 68, normalized size = 1.94

$$\frac{\ln\,(x+1)\,\text{arccot}\,(x+1)}{2}-\frac{i\ln\,(x+1)\ln\,(1+i\,(x+1))}{4}+\frac{i\ln\,(x+1)\ln\,(1-i\,(x+1))}{4}-\frac{i\,\text{dilog}\,(1+i\,(x+1))}{4}+\frac{i\,\text{dilog}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arccot(x+1)/(2+2*x),x)
[Out] 1/2*ln(x+1)*arccot(x+1)-1/4*I*ln(x+1)*ln(1+I*(x+1))+1/4*I*ln(x+1)*ln(1-I*(x
+1))-1/4*I*dilog(1+I*(x+1))+1/4*I*dilog(1-I*(x+1))
```

maxima [B] time = 0.46, size = 64, normalized size = 1.83

$$\frac{1}{4}\,\arctan\,(x+1,0)\log\left(x^2+2\,x+2\right)+\frac{1}{2}\,\text{arccot}\,(x+1)\log\,(x+1)+\frac{1}{2}\,\arctan\,(x+1)\log\,(x+1)-\frac{1}{2}\,\arctan\,(x+1$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(1+x)/(2+2*x),x, algorithm="maxima")
[Out] 1/4*arctan2(x + 1, 0)*log(x^2 + 2*x + 2) + 1/2*arccot(x + 1)*log(x + 1) + 1
/2*arctan(x + 1)*log(x + 1) - 1/2*arctan(x + 1)*log(abs(x + 1)) + 1/4*I*dil
og(I*x + I + 1) - 1/4*I*dilog(-I*x - I + 1)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{\text{acot}\,(x+1)}{2\,x+2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(acot(x + 1)/(2*x + 2),x)
```

```
[Out] int(acot(x + 1)/(2*x + 2), x)
```

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

$$\frac{\int \frac{\operatorname{acot}(x+1)}{x+1}\,dx}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(acot(1+x)/(2+2*x),x)
```

```
[Out] Integral(acot(x + 1)/(x + 1), x)/2
```

3.127 $\int \frac{\cot^{-1}(a+bx)}{\frac{ad}{b}+dx}\,dx$

Optimal. Leaf size=45

$$\frac{i\text{Li}_2\left(\frac{i}{a+bx}\right)}{2d}-\frac{i\text{Li}_2\left(-\frac{i}{a+bx}\right)}{2d}$$

```
[Out] -1/2*I*polylog(2,-I/(b*x+a))/d+1/2*I*polylog(2,I/(b*x+a))/d
```

Rubi [A] time = 0.05, antiderivative size = 45, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.210, Rules used = {5044, 12, 4849, 2391}

$$\frac{i\text{PolyLog}\left(2,\frac{i}{a+bx}\right)}{2d}-\frac{i\text{PolyLog}\left(2,-\frac{i}{a+bx}\right)}{2d}$$

Antiderivative was successfully verified.

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

```
[Out] ((-I/2)*PolyLog[2, (-I)/(a + b*x)])/d + ((I/2)*PolyLog[2, I/(a + b*x)])/d
```

Rule 12

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

Rule 2391

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

Rule 4849

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))/(x_), x_Symbol] :> Simp[a*Log[x], x]
 + (Dist[(I*b)/2, Int[Log[1 - I/(c*x)]/x, x], x] - Dist[(I*b)/2, Int[Log[1
+ I/(c*x)]/x, x], x]) /; FreeQ[{a, b, c}, x]
```

Rule 5044

```
Int[((a_.) + ArcCot[(c_) + (d_.)*(x_)]*(b_.))^(p_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((f*x)/d)^m*(a + b*ArcCot[x])^p, x],
x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m}, x] && EqQ[d*e - c*f, 0] &&
IGtQ[p, 0]
```

Rubi steps

$$\int \frac{\cot^{-1}(a+bx)}{\frac{ad}{b}+dx}\,dx = \frac{\text{Subst}\left(\int \frac{b\cot^{-1}(x)}{dx}\,dx, x, a+bx\right)}{b}$$
$$= \frac{\text{Subst}\left(\int \frac{\cot^{-1}(x)}{x}\,dx, x, a+bx\right)}{d}$$
$$= \frac{i\,\text{Subst}\left(\int \frac{\log\left(1-\frac{i}{x}\right)}{x}\,dx, x, a+bx\right)}{2d} - \frac{i\,\text{Subst}\left(\int \frac{\log\left(1+\frac{i}{x}\right)}{x}\,dx, x, a+bx\right)}{2d}$$
$$= -\frac{i\text{Li}_2\left(-\frac{i}{a+bx}\right)}{2d} + \frac{i\text{Li}_2\left(\frac{i}{a+bx}\right)}{2d}$$

Mathematica [A] time = 0.01, size = 38, normalized size = 0.84

$$-\frac{i\left(\text{Li}_2\left(-\frac{i}{a+bx}\right)-\text{Li}_2\left(\frac{i}{a+bx}\right)\right)}{2d}$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcCot[a + b*x]/((a*d)/b + d*x),x]
[Out] ((-1/2*I)*(PolyLog[2, (-I)/(a + b*x)] - PolyLog[2, I/(a + b*x)]))/d
```

fricas [F] time = 1.73, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{b\,\text{arccot}\,(bx+a)}{bdx+ad}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(b*x+a)/(a*d/b+d*x),x, algorithm="fricas")
[Out] integral(b*arccot(b*x + a)/(b*d*x + a*d), x)
```

giac [B] time = 0.69, size = 103, normalized size = 2.29

$$-\frac{\arctan\left(\frac{1}{bx+a}\right)\tan\left(\frac{1}{2}\arctan\left(\frac{1}{bx+a}\right)\right)^4 + 2\arctan\left(\frac{1}{bx+a}\right)\tan\left(\frac{1}{2}\arctan\left(\frac{1}{bx+a}\right)\right)^2 - 2\tan\left(\frac{1}{2}\arctan\left(\frac{1}{bx+a}\right)\right)^3 +}{8\,bd\tan\left(\frac{1}{2}\arctan\left(\frac{1}{bx+a}\right)\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(b*x+a)/(a*d/b+d*x),x, algorithm="giac")
[Out] -1/8*(arctan(1/(b*x + a))*tan(1/2*arctan(1/(b*x + a)))^4 + 2*arctan(1/(b*x
+ a))*tan(1/2*arctan(1/(b*x + a)))^2 - 2*tan(1/2*arctan(1/(b*x + a)))^3 + a
rctan(1/(b*x + a)) + 2*tan(1/2*arctan(1/(b*x + a))))/(b*d*tan(1/2*arctan(1/
(b*x + a)))^2)
```

maple [B] time = 0.06, size = 98, normalized size = 2.18

$$\frac{\ln(bx+a)\,\text{arccot}\,(bx+a)}{d} - \frac{i\ln(bx+a)\ln(1+i(bx+a))}{2d} + \frac{i\ln(bx+a)\ln(1-i(bx+a))}{2d} - \frac{i\,\text{dilog}\,(1+i(bx+}{2d}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/d*ln(b*x+a)*arccot(b*x+a)-1/2*I/d*ln(b*x+a)*ln(1+I*(b*x+a))+1/2*I/d*ln(b*
x+a)*ln(1-I*(b*x+a))-1/2*I/d*dilog(1+I*(b*x+a))+1/2*I/d*dilog(1-I*(b*x+a))
```

maxima [B] time = 0.48, size = 122, normalized size = 2.71

$$\frac{\operatorname{arccot}(bx+a)\log\left(dx+\frac{ad}{b}\right)}{d}+\frac{\arctan\left(\frac{b^2x+ab}{b}\right)\log\left(dx+\frac{ad}{b}\right)}{d}+\frac{\arctan(bx+a,0)\log\left(b^2x^2+2\,abx+a^2+1\right)-2}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] arccot(b*x + a)*log(d*x + a*d/b)/d + arctan((b^2*x + a*b)/b)*log(d*x + a*d/
b)/d + 1/2*(arctan2(b*x + a, 0)*log(b^2*x^2 + 2*a*b*x + a^2 + 1) - 2*arctan
(b*x + a)*log(abs(b*x + a)) + I*dilog(I*b*x + I*a + 1) - I*dilog(-I*b*x - I
*a + 1))/d
```

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

$$\int \frac{\operatorname{acot}(a+b\,x)}{d\,x+\frac{a\,d}{b}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

$$\frac{b\int\frac{\operatorname{acot}(a+bx)}{a+bx}\,dx}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

3.128 $\int (a+bx)^2 \sqrt{\cot^{-1}(a+bx)}\, dx$

Optimal. Leaf size=21

$$\text{Int}\left((a+bx)^2\sqrt{\cot^{-1}(a+bx)},x\right)$$

```
[Out] Unintegrable((b*x+a)^2*arccot(b*x+a)^(1/2),x)
```

Rubi [A] time = 0.02, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int (a+bx)^2\sqrt{\cot^{-1}(a+bx)}\, dx$$

Verification is Not applicable to the result.

```
[In] Int[(a + b*x)^2*Sqrt[ArcCot[a + b*x]],x]
```

```
[Out] Defer[Int][(a + b*x)^2*Sqrt[ArcCot[a + b*x]], x]
```

Rubi steps

$$\int (a+bx)^2\sqrt{\cot^{-1}(a+bx)}\, dx = \int (a+bx)^2\sqrt{\cot^{-1}(a+bx)}\, dx$$

Mathematica [A] time = 9.26, size = 0, normalized size = 0.00

$$\int (a+bx)^2\sqrt{\cot^{-1}(a+bx)}\, dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(a + b*x)^2*Sqrt[ArcCot[a + b*x]],x]
```

```
[Out] Integrate[(a + b*x)^2*Sqrt[ArcCot[a + b*x]], x]
```

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

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)^2*arccot(b*x+a)^(1/2),x, algorithm="fricas")
```

```
[Out] Exception raised: TypeError >> Error detected within library code: integ
rate: implementation incomplete (constant residues)
```

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

$$\int (bx+a)^2\sqrt{\operatorname{arccot}(bx+a)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)^2*arccot(b*x+a)^(1/2),x, algorithm="giac")
```

```
[Out] integrate((b*x + a)^2*sqrt(arccot(b*x + a)), x)
```

maple [A] time = 3.41, size = 0, normalized size = 0.00

$$\int (bx+a)^2\sqrt{\operatorname{arccot}(bx+a)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)^2*arccot(b*x+a)^(1/2),x)
```

```
[Out] int((b*x+a)^2*arccot(b*x+a)^(1/2),x)
```

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

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)^2*arccot(b*x+a)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError >> ECL says: Error executing code in Maxima:
 expt: undefined: 0 to a negative exponent.
```

mupad [A] time = 0.00, size = -1, normalized size = -0.05

$$\int \sqrt{\mathrm{acot}\left(a+b\,x\right)}\,{\left(a+b\,x\right)}^2 \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(acot(a + b*x)^(1/2)*(a + b*x)^2,x)
```

```
[Out] int(acot(a + b*x)^(1/2)*(a + b*x)^2, x)
```

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

$$\int \left(a + bx\right)^{2} \sqrt{\operatorname{acot}{\left(a + bx \right)}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)**2*acot(b*x+a)**(1/2),x)
```

```
[Out] Integral((a + b*x)**2*sqrt(acot(a + b*x)), x)
```

3.129 $\int (e+fx)^3 \left(a+b\cot^{-1}(c+dx)\right)\,dx$

Optimal. Leaf size=233

$$\frac{(e+fx)^4\left(a+b\cot^{-1}(c+dx)\right)}{4f}+\frac{bfx\left(-\left(1-6c^2\right)f^2-12cdef+6d^2e^2\right)}{4d^3}+\frac{b\left(-6\left(1-c^2\right)d^2e^2f^2+4c\left(3-c^2\right)de\right.}{}$$

```
[Out] 1/4*b*f*(6*d^2*e^2-12*c*d*e*f-(-6*c^2+1)*f^2)*x/d^3+1/2*b*f^2*(-c*f+d*e)*(d
*x+c)^2/d^4+1/12*b*f^3*(d*x+c)^3/d^4+1/4*(f*x+e)^4*(a+b*arccot(d*x+c))/f+1/
4*b*(d^4*e^4-4*c*d^3*e^3*f-6*(-c^2+1)*d^2*e^2*f^2+4*c*(-c^2+3)*d*e*f^3+(c^4
-6*c^2+1)*f^4)*arctan(d*x+c)/d^4/f+1/2*b*(-c*f+d*e)*(-c*f+d*e+f)*(d*e-(1+c)
*f)*ln(1+(d*x+c)^2)/d^4
```

Rubi [A] time = 0.36, antiderivative size = 233, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}} = 0.333$, Rules used = {5048, 4863, 702, 635, 203, 260}

$$\frac{(e+fx)^4\left(a+b\cot^{-1}(c+dx)\right)}{4f}+\frac{bfx\left(-\left(1-6c^2\right)f^2-12cdef+6d^2e^2\right)}{4d^3}+\frac{b\left(-6\left(1-c^2\right)d^2e^2f^2+4c\left(3-c^2\right)de\right.}{}$$

Antiderivative was successfully verified.

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

```
[Out] (b*f*(6*d^2*e^2 - 12*c*d*e*f - (1 - 6*c^2)*f^2)*x)/(4*d^3) + (b*f^2*(d*e -
c*f)*(c + d*x)^2)/(2*d^4) + (b*f^3*(c + d*x)^3)/(12*d^4) + ((e + f*x)^4*(a
+ b*ArcCot[c + d*x]))/(4*f) + (b*(d^4*e^4 - 4*c*d^3*e^3*f - 6*(1 - c^2)*d^2
*e^2*f^2 + 4*c*(3 - c^2)*d*e*f^3 + (1 - 6*c^2 + c^4)*f^4)*ArcTan[c + d*x])/
(4*d^4*f) + (b*(d*e - c*f)*(d*e + f - c*f)*(d*e - (1 + c)*f)*Log[1 + (c + d
*x)^2])/(2*d^4)
```

Rule 203

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

Rule 260

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

Rule 635

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> Dist[d, Int[1/(
a + c*x^2), x], x] + Dist[e, Int[x/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e
}, x] &&  !NiceSqrtQ[-(a*c)]
```

Rule 702

```
Int[((d_) + (e_.)*(x_))^(m_)/((a_) + (c_.)*(x_)^2), x_Symbol] :> Int[Polyno
mialDivide[(d + e*x)^m, a + c*x^2, x], x] /; FreeQ[{a, c, d, e}, x] && NeQ[
c*d^2 + a*e^2, 0] && IGtQ[m, 1] && (NeQ[d, 0] || GtQ[m, 2])
```

Rule 4863

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))*((d_) + (e_.)*(x_))^(q_.), x_Symbol]
 :> Simp[((d + e*x)^(q + 1)*(a + b*ArcCot[c*x]))/(e*(q + 1)), x] + Dist[(b*
c)/(e*(q + 1)), Int[(d + e*x)^(q + 1)/(1 + c^2*x^2), x], x] /; FreeQ[{a, b,
```

```
c, d, e, q}, x] && NeQ[q, -1]
```

Rule 5048

```
Int[((a_.) + ArcCot[(c_) + (d_.)*(x_)]*(b_.))^(p_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cCot[x])^p, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, p}, x] && IG
tQ[p, 0]
```

Rubi steps

$$\int (e+fx)^3 \left(a+b\cot^{-1}(c+dx)\right) dx = \frac{\text{Subst}\left(\int \left(\frac{de-cf}{d}+\frac{fx}{d}\right)^3 \left(a+b\cot^{-1}(x)\right) dx, x, c+dx\right)}{d}$$

$$= \frac{(e+fx)^4 \left(a+b\cot^{-1}(c+dx)\right)}{4f} + \frac{b\,\text{Subst}\left(\int \frac{\left(\frac{de-cf}{d}+\frac{fx}{d}\right)^4}{1+x^2} dx, x, c+dx\right)}{4f}$$

$$= \frac{(e+fx)^4 \left(a+b\cot^{-1}(c+dx)\right)}{4f} + \frac{b\,\text{Subst}\left(\int \left(\frac{f^2\left(6d^2e^2-12cdef-\left(1-6c^2\right)f^2\right)}{d^4} + \frac{4}{}\right.\right.}{}$$

$$= \frac{bf\left(6d^2e^2-12cdef-\left(1-6c^2\right)f^2\right)x}{4d^3} + \frac{bf^2(de-cf)(c+dx)^2}{2d^4} + \frac{bf^3(c+d}{12d^4}$$

$$= \frac{bf\left(6d^2e^2-12cdef-\left(1-6c^2\right)f^2\right)x}{4d^3} + \frac{bf^2(de-cf)(c+dx)^2}{2d^4} + \frac{bf^3(c+d}{12d^4}$$

$$= \frac{bf\left(6d^2e^2-12cdef-\left(1-6c^2\right)f^2\right)x}{4d^3} + \frac{bf^2(de-cf)(c+dx)^2}{2d^4} + \frac{bf^3(c+d}{12d^4}$$

Mathematica [C] time = 0.29, size = 157, normalized size = 0.67

$$\frac{(e+fx)^4\left(a+b\cot^{-1}(c+dx)\right) + \frac{b\left(6dfx^2x\left(\left(6c^2-1\right)f^2-12cdef+6d^2e^2\right)+12f^3(c+dx)^2(de-cf)-3i(de-(c-i)f)^4\log(-c-dx+i)+3i(de-(c+i)f)^4\log\right.}{6d^4}}{4f}$$

Antiderivative was successfully verified.

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

```
[Out] ((e + f*x)^4*(a + b*ArcCot[c + d*x]) + (b*(6*d*f^2*(6*d^2*e^2 - 12*c*d*e*f
+ (-1 + 6*c^2)*f^2)*x + 12*f^3*(d*e - c*f)*(c + d*x)^2 + 2*f^4*(c + d*x)^3
- (3*I)*(d*e - (-I + c)*f)^4*Log[I - c - d*x] + (3*I)*(d*e - (I + c)*f)^4*L
og[I + c + d*x]))/(6*d^4))/(4*f)
```

fricas [A] time = 1.94, size = 325, normalized size = 1.39

$$\frac{3\,ad^4f^3x^4 + \left(12\,ad^4ef^2 + bd^3f^3\right)x^3 + 3\left(6\,ad^4e^2f + 2\,bd^3ef^2 - bcd^2f^3\right)x^2 + 3\left(4\,ad^4e^3 + 6\,bd^3e^2f - 8\,bcd^2ef^2 + \left(\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

```
c*d^2*e*f^2 + (3*b*c^2 - b)*d*f^3)*x + 3*(b*d^4*f^3*x^4 + 4*b*d^4*e*f^2*x^3
 + 6*b*d^4*e^2*f*x^2 + 4*b*d^4*e^3*x)*arccot(d*x + c) - 3*(4*b*c*d^3*e^3 -
6*(b*c^2 - b)*d^2*e^2*f + 4*(b*c^3 - 3*b*c)*d*e*f^2 - (b*c^4 - 6*b*c^2 + b)
*f^3)*arctan(d*x + c) + 6*(b*d^3*e^3 - 3*b*c*d^2*e^2*f + (3*b*c^2 - b)*d*e*
f^2 - (b*c^3 - b*c)*f^3)*log(d^2*x^2 + 2*c*d*x + c^2 + 1))/d^4
```

giac [B] time = 2.76, size = 2272, normalized size = 9.75

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/192*(96*b*c^3*f^3*arctan(1/(d*x + c))*tan(1/2*arctan(1/(d*x + c)))^5 - 28
8*b*c^2*d*f^2*arctan(1/(d*x + c))*e*tan(1/2*arctan(1/(d*x + c)))^5 + 72*b*c
^2*f^3*arctan(1/(d*x + c))*tan(1/2*arctan(1/(d*x + c)))^6 - 144*b*c*d*f^2*a
rctan(1/(d*x + c))*e*tan(1/2*arctan(1/(d*x + c)))^6 + 24*b*c*f^3*arctan(1/(
d*x + c))*tan(1/2*arctan(1/(d*x + c)))^7 - 24*b*d*f^2*arctan(1/(d*x + c))*e
*tan(1/2*arctan(1/(d*x + c)))^7 + 3*b*f^3*arctan(1/(d*x + c))*tan(1/2*arcta
n(1/(d*x + c)))^8 + 96*b*c^3*f^3*log(16*tan(1/2*arctan(1/(d*x + c)))^2/(tan
(1/2*arctan(1/(d*x + c)))^4 + 2*tan(1/2*arctan(1/(d*x + c)))^2 + 1))*tan(1/
2*arctan(1/(d*x + c)))^4 - 288*b*c^2*d*f^2*e*log(16*tan(1/2*arctan(1/(d*x +
 c)))^2/(tan(1/2*arctan(1/(d*x + c)))^4 + 2*tan(1/2*arctan(1/(d*x + c)))^2
+ 1))*tan(1/2*arctan(1/(d*x + c)))^4 + 96*a*c^3*f^3*tan(1/2*arctan(1/(d*x +
 c)))^5 + 288*b*c*d^2*f*arctan(1/(d*x + c))*e^2*tan(1/2*arctan(1/(d*x + c))
)^5 - 288*a*c^2*d*f^2*e*tan(1/2*arctan(1/(d*x + c)))^5 + 72*a*c^2*f^3*tan(1
/2*arctan(1/(d*x + c)))^6 + 72*b*d^2*f*arctan(1/(d*x + c))*e^2*tan(1/2*arct
an(1/(d*x + c)))^6 - 144*a*c*d*f^2*e*tan(1/2*arctan(1/(d*x + c)))^6 + 24*a*
c*f^3*tan(1/2*arctan(1/(d*x + c)))^7 - 24*a*d*f^2*e*tan(1/2*arctan(1/(d*x +
 c)))^7 + 3*a*f^3*tan(1/2*arctan(1/(d*x + c)))^8 - 96*b*c^3*f^3*arctan(1/(d
*x + c))*tan(1/2*arctan(1/(d*x + c)))^3 + 288*b*c^2*d*f^2*arctan(1/(d*x + c
))*e*tan(1/2*arctan(1/(d*x + c)))^3 + 144*b*c^2*f^3*arctan(1/(d*x + c))*tan
(1/2*arctan(1/(d*x + c)))^4 - 288*b*c*d*f^2*arctan(1/(d*x + c))*e*tan(1/2*a
rctan(1/(d*x + c)))^4 + 288*b*c*d^2*f*e^2*log(16*tan(1/2*arctan(1/(d*x + c)
))^2/(tan(1/2*arctan(1/(d*x + c)))^4 + 2*tan(1/2*arctan(1/(d*x + c)))^2 + 1
))*tan(1/2*arctan(1/(d*x + c)))^4 - 144*b*c^2*f^3*tan(1/2*arctan(1/(d*x + c
)))^5 - 72*b*c*f^3*arctan(1/(d*x + c))*tan(1/2*arctan(1/(d*x + c)))^5 - 96*
b*d^3*arctan(1/(d*x + c))*e^3*tan(1/2*arctan(1/(d*x + c)))^5 + 288*a*c*d^2*
f*e^2*tan(1/2*arctan(1/(d*x + c)))^5 + 288*b*c*d*f^2*e*tan(1/2*arctan(1/(d*
x + c)))^5 + 72*b*d*f^2*arctan(1/(d*x + c))*e*tan(1/2*arctan(1/(d*x + c)))^
5 - 24*b*c*f^3*tan(1/2*arctan(1/(d*x + c)))^6 - 12*b*f^3*arctan(1/(d*x + c)
)*tan(1/2*arctan(1/(d*x + c)))^6 + 72*a*d^2*f*e^2*tan(1/2*arctan(1/(d*x + c
)))^6 + 24*b*d*f^2*e*tan(1/2*arctan(1/(d*x + c)))^6 - 2*b*f^3*tan(1/2*arcta
n(1/(d*x + c)))^7 - 96*a*c^3*f^3*tan(1/2*arctan(1/(d*x + c)))^3 - 288*b*c*d
^2*f*arctan(1/(d*x + c))*e^2*tan(1/2*arctan(1/(d*x + c)))^3 + 288*a*c^2*d*f
^2*e*tan(1/2*arctan(1/(d*x + c)))^3 + 144*a*c^2*f^3*tan(1/2*arctan(1/(d*x +
 c)))^4 + 144*b*d^2*f*arctan(1/(d*x + c))*e^2*tan(1/2*arctan(1/(d*x + c)))^
4 - 288*a*c*d*f^2*e*tan(1/2*arctan(1/(d*x + c)))^4 - 96*b*c*f^3*log(16*tan(
1/2*arctan(1/(d*x + c)))^2/(tan(1/2*arctan(1/(d*x + c)))^4 + 2*tan(1/2*arct
an(1/(d*x + c)))^2 + 1))*tan(1/2*arctan(1/(d*x + c)))^4 - 96*b*d^3*e^3*log(
16*tan(1/2*arctan(1/(d*x + c)))^2/(tan(1/2*arctan(1/(d*x + c)))^4 + 2*tan(1
/2*arctan(1/(d*x + c)))^2 + 1))*tan(1/2*arctan(1/(d*x + c)))^4 + 96*b*d*f^2
*e*log(16*tan(1/2*arctan(1/(d*x + c)))^2/(tan(1/2*arctan(1/(d*x + c)))^4 +
2*tan(1/2*arctan(1/(d*x + c)))^2 + 1))*tan(1/2*arctan(1/(d*x + c)))^4 - 72*
a*c*f^3*tan(1/2*arctan(1/(d*x + c)))^5 - 96*a*d^3*e^3*tan(1/2*arctan(1/(d*x
 + c)))^5 - 144*b*d^2*f*e^2*tan(1/2*arctan(1/(d*x + c)))^5 + 72*a*d*f^2*e*t
an(1/2*arctan(1/(d*x + c)))^5 - 12*a*f^3*tan(1/2*arctan(1/(d*x + c)))^6 + 7
2*b*c^2*f^3*arctan(1/(d*x + c))*tan(1/2*arctan(1/(d*x + c)))^2 - 144*b*c*d*
f^2*arctan(1/(d*x + c))*e*tan(1/2*arctan(1/(d*x + c)))^2 + 144*b*c^2*f^3*ta
n(1/2*arctan(1/(d*x + c)))^3 + 72*b*c*f^3*arctan(1/(d*x + c))*tan(1/2*arcta
```

```
n(1/(d*x + c)))^3 + 96*b*d^3*arctan(1/(d*x + c))*e^3*tan(1/2*arctan(1/(d*x
+ c)))^3 - 288*a*c*d^2*f*e^2*tan(1/2*arctan(1/(d*x + c)))^3 - 288*b*c*d*f^2
*e*tan(1/2*arctan(1/(d*x + c)))^3 - 72*b*d*f^2*arctan(1/(d*x + c))*e*tan(1/
2*arctan(1/(d*x + c)))^3 - 48*b*c*f^3*tan(1/2*arctan(1/(d*x + c)))^4 - 30*b
*f^3*arctan(1/(d*x + c))*tan(1/2*arctan(1/(d*x + c)))^4 + 144*a*d^2*f*e^2*t
an(1/2*arctan(1/(d*x + c)))^4 + 48*b*d*f^2*e*tan(1/2*arctan(1/(d*x + c)))^4
 + 30*b*f^3*tan(1/2*arctan(1/(d*x + c)))^5 + 72*a*c^2*f^3*tan(1/2*arctan(1/
(d*x + c)))^2 + 72*b*d^2*f*arctan(1/(d*x + c))*e^2*tan(1/2*arctan(1/(d*x +
c)))^2 - 144*a*c*d*f^2*e*tan(1/2*arctan(1/(d*x + c)))^2 + 72*a*c*f^3*tan(1/
2*arctan(1/(d*x + c)))^3 + 96*a*d^3*e^3*tan(1/2*arctan(1/(d*x + c)))^3 + 14
4*b*d^2*f*e^2*tan(1/2*arctan(1/(d*x + c)))^3 - 72*a*d*f^2*e*tan(1/2*arctan(
1/(d*x + c)))^3 - 30*a*f^3*tan(1/2*arctan(1/(d*x + c)))^4 - 24*b*c*f^3*arct
an(1/(d*x + c))*tan(1/2*arctan(1/(d*x + c))) + 24*b*d*f^2*arctan(1/(d*x + c
))*e*tan(1/2*arctan(1/(d*x + c))) - 24*b*c*f^3*tan(1/2*arctan(1/(d*x + c)))
^2 - 12*b*f^3*arctan(1/(d*x + c))*tan(1/2*arctan(1/(d*x + c)))^2 + 72*a*d^2
*f*e^2*tan(1/2*arctan(1/(d*x + c)))^2 + 24*b*d*f^2*e*tan(1/2*arctan(1/(d*x
+ c)))^2 - 30*b*f^3*tan(1/2*arctan(1/(d*x + c)))^3 - 24*a*c*f^3*tan(1/2*arc
tan(1/(d*x + c))) + 24*a*d*f^2*e*tan(1/2*arctan(1/(d*x + c))) - 12*a*f^3*ta
n(1/2*arctan(1/(d*x + c)))^2 + 3*b*f^3*arctan(1/(d*x + c)) + 2*b*f^3*tan(1/
2*arctan(1/(d*x + c))) + 3*a*f^3)/(d^4*tan(1/2*arctan(1/(d*x + c)))^4)
```

maple [B] time = 0.05, size = 526, normalized size = 2.26

$$-\frac{3bf\ln\left(1+(dx+c)^2\right)ce^2}{2d^2}-\frac{bf^2\arctan(dx+c)c^3e}{d^3}+\frac{3bf\arctan(dx+c)c^2e^2}{2d^2}+\frac{3bf^2\ln\left(1+(dx+c)^2\right)c^2e}{2d^3}+\frac{3bf}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -3/2/d^2*b*f*ln(1+(d*x+c)^2)*c*e^2-1/d^3*b*f^2*arctan(d*x+c)*c^3*e+3/2/d^2*
b*f*arctan(d*x+c)*c^2*e^2+3/2/d^3*b*f^2*ln(1+(d*x+c)^2)*c^2*e+3/d^3*b*f^2*a
rctan(d*x+c)*c*e-2*b/d^2*f^2*c*e*x+1/4/d^4*b*f^3*arctan(d*x+c)+1/2/d*b*ln(1
+(d*x+c)^2)*e^3+3/2*a*f*x^2*e^2+a*f^2*x^3*e+1/12/d*b*f^3*x^3-1/4*b/d^3*f^3*
x+1/4*b*f^3*arccot(d*x+c)*x^4+arccot(d*x+c)*x*b*e^3+1/4*b/f*arccot(d*x+c)*e
^4+1/4*b/f*arctan(d*x+c)*e^4-1/4/d^2*b*f^3*x^2*c+1/2/d*b*f^2*e*x^2+3/4*b/d^
3*f^3*c^2*x+3/2*b/d*f*e^2*x+1/2/d^4*b*f^3*ln(1+(d*x+c)^2)*c-1/d*b*arctan(d*
x+c)*c*e^3-1/2/d^3*b*f^2*ln(1+(d*x+c)^2)*e-3/2/d^4*b*f^3*arctan(d*x+c)*c^2+
3/2/d^2*b*f*c*e^2-5/2/d^3*b*f^2*c^2*e+b*f^2*arccot(d*x+c)*e*x^3+1/4/d^4*b*f
^3*arctan(d*x+c)*c^4-3/2/d^2*b*f*arctan(d*x+c)*e^2-1/2/d^4*b*f^3*ln(1+(d*x+
c)^2)*c^3+1/4*a/f*e^4-1/4/d^4*b*f^3*c+13/12/d^4*b*f^3*c^3+3/2*b*f*arccot(d*
x+c)*e^2*x^2+1/4*a*f^3*x^4+a*x*e^3
```

maxima [A] time = 0.45, size = 341, normalized size = 1.46

$$\frac{1}{4}af^3x^4+aef^2x^3+\frac{3}{2}ae^2fx^2+\frac{3}{2}\left(x^2\operatorname{arccot}(dx+c)+d\left(\frac{x}{d^2}+\frac{\left(c^2-1\right)\arctan\left(\frac{d^2x+cd}{d}\right)}{d^3}-\frac{c\log\left(d^2x^2+2\,cdx+c^2+\right.}{d^3}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/4*a*f^3*x^4 + a*e*f^2*x^3 + 3/2*a*e^2*f*x^2 + 3/2*(x^2*arccot(d*x + c) +
d*(x/d^2 + (c^2 - 1)*arctan((d^2*x + c*d)/d)/d^3 - c*log(d^2*x^2 + 2*c*d*x
+ c^2 + 1)/d^3))*b*e^2*f + 1/2*(2*x^3*arccot(d*x + c) + d*((d*x^2 - 4*c*x)/
d^3 - 2*(c^3 - 3*c)*arctan((d^2*x + c*d)/d)/d^4 + (3*c^2 - 1)*log(d^2*x^2 +
 2*c*d*x + c^2 + 1)/d^4))*b*e*f^2 + 1/12*(3*x^4*arccot(d*x + c) + d*((d^2*x
^3 - 3*c*d*x^2 + 3*(3*c^2 - 1)*x)/d^4 + 3*(c^4 - 6*c^2 + 1)*arctan((d^2*x +
 c*d)/d)/d^5 - 6*(c^3 - c)*log(d^2*x^2 + 2*c*d*x + c^2 + 1)/d^5))*b*f^3 + a
*e^3*x + 1/2*(2*(d*x + c)*arccot(d*x + c) + log((d*x + c)^2 + 1))*b*e^3/d
```

mupad [B] time = 1.19, size = 783, normalized size = 3.36

$$\operatorname{acot}(c+dx)\left(b e^3 x+\frac{3 b e^2 f x^2}{2}+b e f^2 x^3+\frac{b f^3 x^4}{4}\right)+x\left(\frac{e\left(6 a c^2 f^2+12 a c d e f+2 a d^2 e^2+3 b d e f+6\right.}{2 d^2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] acot(c + d*x)*((b*f^3*x^4)/4 + b*e^3*x + (3*b*e^2*f*x^2)/2 + b*e*f^2*x^3) +
 x*((e*(6*a*f^2 + 6*a*c^2*f^2 + 2*a*d^2*e^2 + 3*b*d*e*f + 12*a*c*d*e*f))/(2
*d^2) - ((4*c^2 + 4)*((f^2*(b*f + 8*a*c*f + 12*a*d*e))/(4*d) - (2*a*c*f^3)/
d))/(4*d^2) + (2*c*((2*c*((f^2*(b*f + 8*a*c*f + 12*a*d*e))/(4*d) - (2*a*c*f
^3)/d))/d - (4*a*f^3 + 4*a*c^2*f^3 + 4*b*d*e*f^2 + 12*a*d^2*e^2*f + 24*a*c*
d*e*f^2)/(4*d^2) + (a*f^3*(4*c^2 + 4))/(4*d^2)))/d) - x^2*((c*((f^2*(b*f +
8*a*c*f + 12*a*d*e))/(4*d) - (2*a*c*f^3)/d))/d - (4*a*f^3 + 4*a*c^2*f^3 + 4
*b*d*e*f^2 + 12*a*d^2*e^2*f + 24*a*c*d*e*f^2)/(8*d^2) + (a*f^3*(4*c^2 + 4))
/(8*d^2)) + x^3*((f^2*(b*f + 8*a*c*f + 12*a*d*e))/(12*d) - (2*a*c*f^3)/(3*d
)) + (a*f^3*x^4)/4 + (log(c^2 + d^2*x^2 + 2*c*d*x + 1)*(64*b*d^7*e^3 - 64*b
*c^3*d^4*f^3 + 64*b*c*d^4*f^3 - 64*b*d^5*e*f^2 - 192*b*c*d^6*e^2*f + 192*b*
c^2*d^5*e*f^2))/(128*d^8) + (b*atan((4*d^3*((c*(f^3 - 6*c^2*f^3 + c^4*f^3 -
 4*c*d^3*e^3 - 6*d^2*e^2*f + 6*c^2*d^2*e^2*f + 12*c*d*e*f^2 - 4*c^3*d*e*f^2
))/(4*d^3) + (x*(f^3 - 6*c^2*f^3 + c^4*f^3 - 4*c*d^3*e^3 - 6*d^2*e^2*f + 6*
c^2*d^2*e^2*f + 12*c*d*e*f^2 - 4*c^3*d*e*f^2))/(4*d^2)))/(f^3 - 6*c^2*f^3 +
 c^4*f^3 - 4*c*d^3*e^3 - 6*d^2*e^2*f + 6*c^2*d^2*e^2*f + 12*c*d*e*f^2 - 4*c
^3*d*e*f^2))*(f^3 - 6*c^2*f^3 + c^4*f^3 - 4*c*d^3*e^3 - 6*d^2*e^2*f + 6*c^2
*d^2*e^2*f + 12*c*d*e*f^2 - 4*c^3*d*e*f^2))/(4*d^4)
```

sympy [A] time = 26.45, size = 654, normalized size = 2.81

$$\begin{cases} a e^3 x+\frac{3 a e^2 f x^2}{2}+a e f^2 x^3+\frac{a f^3 x^4}{4}-\frac{b c^4 f^3 \operatorname{acot}(c+dx)}{4 d^4}+\frac{b c^3 e f^2 \operatorname{acot}(c+dx)}{d^3}-\frac{b c^3 f^3 \log\left(\frac{c}{d}+x-\frac{i}{d}\right)}{d^4}-\frac{i b c^3 f^3 \operatorname{acot}(c+dx)}{d^4}-\frac{3 b c^2 e^2 f \cdots}{2 \cdots} \\ (a+b\operatorname{acot}(c))\left(e^3 x+\frac{3 e^2 f x^2}{2}+e f^2 x^3+\frac{f^3 x^4}{4}\right) \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Piecewise((a*e**3*x + 3*a*e**2*f*x**2/2 + a*e*f**2*x**3 + a*f**3*x**4/4 - b
*c**4*f**3*acot(c + d*x)/(4*d**4) + b*c**3*e*f**2*acot(c + d*x)/d**3 - b*c*
*3*f**3*log(c/d + x - I/d)/d**4 - I*b*c**3*f**3*acot(c + d*x)/d**4 - 3*b*c*
*2*e**2*f*acot(c + d*x)/(2*d**2) + 3*b*c**2*e*f**2*log(c/d + x - I/d)/d**3
+ 3*I*b*c**2*e*f**2*acot(c + d*x)/d**3 + 3*b*c**2*f**3*x/(4*d**3) + 3*b*c**
2*f**3*acot(c + d*x)/(2*d**4) + b*c*e**3*acot(c + d*x)/d - 3*b*c*e**2*f*log
(c/d + x - I/d)/d**2 - 3*I*b*c*e**2*f*acot(c + d*x)/d**2 - 2*b*c*e*f**2*x/d
**2 - b*c*f**3*x**2/(4*d**2) - 3*b*c*e*f**2*acot(c + d*x)/d**3 + b*c*f**3*l
og(c/d + x - I/d)/d**4 + I*b*c*f**3*acot(c + d*x)/d**4 + b*e**3*x*acot(c +
d*x) + 3*b*e**2*f*x**2*acot(c + d*x)/2 + b*e*f**2*x**3*acot(c + d*x) + b*f*
*3*x**4*acot(c + d*x)/4 + b*e**3*log(c/d + x - I/d)/d + I*b*e**3*acot(c + d
*x)/d + 3*b*e**2*f*x/(2*d) + b*e*f**2*x**2/(2*d) + b*f**3*x**3/(12*d) + 3*b
*e**2*f*acot(c + d*x)/(2*d**2) - b*e*f**2*log(c/d + x - I/d)/d**3 - I*b*e*f
**2*acot(c + d*x)/d**3 - b*f**3*x/(4*d**3) - b*f**3*acot(c + d*x)/(4*d**4),
 Ne(d, 0)), ((a + b*acot(c))*(e**3*x + 3*e**2*f*x**2/2 + e*f**2*x**3 + f**3
*x**4/4), True))
```

3.130 $\int (e+fx)^2 \left(a+b\cot^{-1}(c+dx)\right)\,dx$

Optimal. Leaf size=154

$$\frac{(e+fx)^3\left(a+b\cot^{-1}(c+dx)\right)}{3f}+\frac{b\left(-\left(1-3c^2\right)f^2-6cdef+3d^2e^2\right)\log\left((c+dx)^2+1\right)}{6d^3}+\frac{b(de-cf)\left(-\left(3-c^2\right)f^2\right.}{}$$

```
[Out] b*f*(-c*f+d*e)*x/d^2+1/6*b*f^2*(d*x+c)^2/d^3+1/3*(f*x+e)^3*(a+b*arccot(d*x+
c))/f+1/3*b*(-c*f+d*e)*(d^2*e^2-2*c*d*e*f-(-c^2+3)*f^2)*arctan(d*x+c)/d^3/f
+1/6*b*(3*d^2*e^2-6*c*d*e*f-(-3*c^2+1)*f^2)*ln(1+(d*x+c)^2)/d^3
```

Rubi [A] time = 0.19, antiderivative size = 154, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333, Rules used = {5048, 4863, 702, 635, 203, 260}

$$\frac{(e+fx)^3\left(a+b\cot^{-1}(c+dx)\right)}{3f}+\frac{b\left(-\left(1-3c^2\right)f^2-6cdef+3d^2e^2\right)\log\left((c+dx)^2+1\right)}{6d^3}+\frac{b(de-cf)\left(-\left(3-c^2\right)f^2\right.}{}$$

Antiderivative was successfully verified.

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

```
[Out] (b*f*(d*e - c*f)*x)/d^2 + (b*f^2*(c + d*x)^2)/(6*d^3) + ((e + f*x)^3*(a + b
*ArcCot[c + d*x]))/(3*f) + (b*(d*e - c*f)*(d^2*e^2 - 2*c*d*e*f - (3 - c^2)*
f^2)*ArcTan[c + d*x])/(3*d^3*f) + (b*(3*d^2*e^2 - 6*c*d*e*f - (1 - 3*c^2)*f
^2)*Log[1 + (c + d*x)^2])/(6*d^3)
```

Rule 203

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

Rule 260

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

Rule 635

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> Dist[d, Int[1/(
a + c*x^2), x], x] + Dist[e, Int[x/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e
}, x] &&  !NiceSqrtQ[-(a*c)]
```

Rule 702

```
Int[((d_) + (e_.)*(x_))^(m_)/((a_) + (c_.)*(x_)^2), x_Symbol] :> Int[Polyno
mialDivide[(d + e*x)^m, a + c*x^2, x], x] /; FreeQ[{a, c, d, e}, x] && NeQ[
c*d^2 + a*e^2, 0] && IGtQ[m, 1] && (NeQ[d, 0] || GtQ[m, 2])
```

Rule 4863

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))*((d_) + (e_.)*(x_))^(q_.), x_Symbol]
 :> Simp[((d + e*x)^(q + 1)*(a + b*ArcCot[c*x]))/(e*(q + 1)), x] + Dist[(b*
c)/(e*(q + 1)), Int[(d + e*x)^(q + 1)/(1 + c^2*x^2), x], x] /; FreeQ[{a, b,
 c, d, e, q}, x] && NeQ[q, -1]
```

Rule 5048

```
Int[((a_.) + ArcCot[(c_) + (d_.)*(x_)]*(b_.))^(p_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cCot[x])^p, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, p}, x] && IG
tQ[p, 0]
```

Rubi steps

$$\int (e+fx)^2\left(a+b\cot^{-1}(c+dx)\right)dx=\frac{\text{Subst}\left(\int\left(\frac{de-cf}{d}+\frac{fx}{d}\right)^2\left(a+b\cot^{-1}(x)\right)dx,x,c+dx\right)}{d}$$

$$=\frac{(e+fx)^3\left(a+b\cot^{-1}(c+dx)\right)}{3f}+\frac{b\,\text{Subst}\left(\int\frac{\left(\frac{de-cf}{d}+\frac{fx}{d}\right)^3}{1+x^2}dx,x,c+dx\right)}{3f}$$

$$=\frac{(e+fx)^3\left(a+b\cot^{-1}(c+dx)\right)}{3f}+\frac{b\,\text{Subst}\left(\int\left(\frac{3f^2(de-cf)}{d^3}+\frac{f^3x}{d^3}+\frac{(de-cf)(\ldots}{\ldots}\right.\right.}{\ldots}$$

$$=\frac{bf(de-cf)x}{d^2}+\frac{bf^2(c+dx)^2}{6d^3}+\frac{(e+fx)^3\left(a+b\cot^{-1}(c+dx)\right)}{3f}+\frac{b\,\text{Sul}\ldots}{\ldots}$$

$$=\frac{bf(de-cf)x}{d^2}+\frac{bf^2(c+dx)^2}{6d^3}+\frac{(e+fx)^3\left(a+b\cot^{-1}(c+dx)\right)}{3f}+\frac{\left(b\left(3\ldots\right.\right.}{\ldots}$$

$$=\frac{bf(de-cf)x}{d^2}+\frac{bf^2(c+dx)^2}{6d^3}+\frac{(e+fx)^3\left(a+b\cot^{-1}(c+dx)\right)}{3f}+\frac{b(de\ldots}{\ldots}$$

Mathematica [C] time = 0.16, size = 118, normalized size = 0.77

$$\frac{(e+fx)^3\left(a+b\cot^{-1}(c+dx)\right)+\frac{b\left(6df^2x(de-cf)-i(de-(c-i)f)^3\log(-c-dx+i)+i(de-(c+i)f)^3\log(c+dx+i)+f^3(c+dx)^2\right)}{2d^3}}{3f}$$

Antiderivative was successfully verified.

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

```
[Out] ((e + f*x)^3*(a + b*ArcCot[c + d*x]) + (b*(6*d*f^2*(d*e - c*f)*x + f^3*(c +
 d*x)^2 - I*(d*e - (-I + c)*f)^3*Log[I - c - d*x] + I*(d*e - (I + c)*f)^3*L
og[I + c + d*x]))/(2*d^3))/(3*f)
```

fricas [A] time = 0.74, size = 206, normalized size = 1.34

$$\frac{2\,ad^3f^2x^3+\left(6\,ad^3ef+bd^2f^2\right)x^2+2\left(3\,ad^3e^2+3\,bd^2ef-2\,bcdf^2\right)x+2\left(bd^3f^2x^3+3\,bd^3efx^2+3\,bd^3e^2x\right)\text{arc}\ldots}{\ldots}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/6*(2*a*d^3*f^2*x^3 + (6*a*d^3*e*f + b*d^2*f^2)*x^2 + 2*(3*a*d^3*e^2 + 3*b
*d^2*e*f - 2*b*c*d*f^2)*x + 2*(b*d^3*f^2*x^3 + 3*b*d^3*e*f*x^2 + 3*b*d^3*e^
2*x)*arccot(d*x + c) - 2*(3*b*c*d^2*e^2 - 3*(b*c^2 - b)*d*e*f + (b*c^3 - 3*
b*c)*f^2)*arctan(d*x + c) + (3*b*d^2*e^2 - 6*b*c*d*e*f + (3*b*c^2 - b)*f^2)
*log(d^2*x^2 + 2*c*d*x + c^2 + 1))/d^3
```

giac [B] time = 1.88, size = 1169, normalized size = 7.59

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/24*(12*b*c^2*f^2*arctan(1/(d*x + c))*tan(1/2*arctan(1/(d*x + c)))^4 - 24
*b*c*d*f*arctan(1/(d*x + c))*e*tan(1/2*arctan(1/(d*x + c)))^4 + 6*b*c*f^2*a
rctan(1/(d*x + c))*tan(1/2*arctan(1/(d*x + c)))^5 - 6*b*d*f*arctan(1/(d*x +
 c))*e*tan(1/2*arctan(1/(d*x + c)))^5 + b*f^2*arctan(1/(d*x + c))*tan(1/2*a
rctan(1/(d*x + c)))^6 + 12*b*c^2*f^2*log(16*tan(1/2*arctan(1/(d*x + c)))^2/
(tan(1/2*arctan(1/(d*x + c)))^4 + 2*tan(1/2*arctan(1/(d*x + c)))^2 + 1))*ta
n(1/2*arctan(1/(d*x + c)))^3 - 24*b*c*d*f*e*log(16*tan(1/2*arctan(1/(d*x +
c)))^2/(tan(1/2*arctan(1/(d*x + c)))^4 + 2*tan(1/2*arctan(1/(d*x + c)))^2 +
 1))*tan(1/2*arctan(1/(d*x + c)))^3 + 12*a*c^2*f^2*tan(1/2*arctan(1/(d*x +
c)))^4 + 12*b*d^2*arctan(1/(d*x + c))*e^2*tan(1/2*arctan(1/(d*x + c)))^4 -
24*a*c*d*f*e*tan(1/2*arctan(1/(d*x + c)))^4 + 6*a*c*f^2*tan(1/2*arctan(1/(d
*x + c)))^5 - 6*a*d*f*e*tan(1/2*arctan(1/(d*x + c)))^5 + a*f^2*tan(1/2*arct
an(1/(d*x + c)))^6 - 12*b*c^2*f^2*arctan(1/(d*x + c))*tan(1/2*arctan(1/(d*x
 + c)))^2 + 24*b*c*d*f*arctan(1/(d*x + c))*e*tan(1/2*arctan(1/(d*x + c)))^2
 + 12*b*c*f^2*arctan(1/(d*x + c))*tan(1/2*arctan(1/(d*x + c)))^3 - 12*b*d*f
*arctan(1/(d*x + c))*e*tan(1/2*arctan(1/(d*x + c)))^3 + 12*b*d^2*e^2*log(16
*tan(1/2*arctan(1/(d*x + c)))^2/(tan(1/2*arctan(1/(d*x + c)))^4 + 2*tan(1/2
*arctan(1/(d*x + c)))^2 + 1))*tan(1/2*arctan(1/(d*x + c)))^3 - 12*b*c*f^2*t
an(1/2*arctan(1/(d*x + c)))^4 - 3*b*f^2*arctan(1/(d*x + c))*tan(1/2*arctan(
1/(d*x + c)))^4 + 12*a*d^2*e^2*tan(1/2*arctan(1/(d*x + c)))^4 + 12*b*d*f*e*
tan(1/2*arctan(1/(d*x + c)))^4 - b*f^2*tan(1/2*arctan(1/(d*x + c)))^5 - 12*
a*c^2*f^2*tan(1/2*arctan(1/(d*x + c)))^2 - 12*b*d^2*arctan(1/(d*x + c))*e^2
*tan(1/2*arctan(1/(d*x + c)))^2 + 24*a*c*d*f*e*tan(1/2*arctan(1/(d*x + c)))
^2 + 12*a*c*f^2*tan(1/2*arctan(1/(d*x + c)))^3 - 12*a*d*f*e*tan(1/2*arctan(
1/(d*x + c)))^3 - 4*b*f^2*log(16*tan(1/2*arctan(1/(d*x + c)))^2/(tan(1/2*ar
ctan(1/(d*x + c)))^4 + 2*tan(1/2*arctan(1/(d*x + c)))^2 + 1))*tan(1/2*arcta
n(1/(d*x + c)))^3 - 3*a*f^2*tan(1/2*arctan(1/(d*x + c)))^4 + 6*b*c*f^2*arct
an(1/(d*x + c))*tan(1/2*arctan(1/(d*x + c))) - 6*b*d*f*arctan(1/(d*x + c))*
e*tan(1/2*arctan(1/(d*x + c))) + 12*b*c*f^2*tan(1/2*arctan(1/(d*x + c)))^2
+ 3*b*f^2*arctan(1/(d*x + c))*tan(1/2*arctan(1/(d*x + c)))^2 - 12*a*d^2*e^2
*tan(1/2*arctan(1/(d*x + c)))^2 - 12*b*d*f*e*tan(1/2*arctan(1/(d*x + c)))^2
 - 2*b*f^2*tan(1/2*arctan(1/(d*x + c)))^3 + 6*a*c*f^2*tan(1/2*arctan(1/(d*x
 + c))) - 6*a*d*f*e*tan(1/2*arctan(1/(d*x + c))) + 3*a*f^2*tan(1/2*arctan(1
/(d*x + c)))^2 - b*f^2*arctan(1/(d*x + c)) - b*f^2*tan(1/2*arctan(1/(d*x +
c))) - a*f^2)/(d^3*tan(1/2*arctan(1/(d*x + c)))^3)
```

maple [B] time = 0.05, size = 312, normalized size = 2.03

$$a x e^2+\frac{b f c e}{d^2}+a f x^2 e-\frac{5 b f^2 c^2}{6 d^3}+b f \operatorname{arccot}(dx+c)\, e x^2-\frac{b f^2 \ln\left(1+(dx+c)^2\right)}{6 d^3}-\frac{b \arctan(dx+c)\, c e^2}{d}+\frac{b f^2 x^2}{6 d}-\frac{b f 1}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] a*x*e^2+1/d^2*b*f*c*e+a*f*x^2*e-5/6/d^3*b*f^2*c^2+b*f*arccot(d*x+c)*e*x^2-1
/6/d^3*b*f^2*ln(1+(d*x+c)^2)-1/d*b*arctan(d*x+c)*c*e^2+1/6/d*b*f^2*x^2-1/d^
2*b*f*ln(1+(d*x+c)^2)*c*e+1/d^2*b*f*arctan(d*x+c)*c^2*e+arccot(d*x+c)*x*b*e
^2+1/3*b*f^2*arccot(d*x+c)*x^3+1/3*a*f^2*x^3+1/3*a/f*e^3+1/d^3*b*f^2*arctan
(d*x+c)*c-1/d^2*b*f*arctan(d*x+c)*e+1/3*b/f*arctan(d*x+c)*e^3-1/3/d^3*b*f^2
*arctan(d*x+c)*c^3+1/2/d^3*b*f^2*ln(1+(d*x+c)^2)*c^2+b/d*f*e*x-2/3*b/d^2*f^
2*c*x+1/3*b/f*arccot(d*x+c)*e^3+1/2*b*e^2*ln(1+(d*x+c)^2)/d
```

maxima [A] time = 0.43, size = 216, normalized size = 1.40

$$\frac{1}{3}af^2x^3+aefx^2+\left(x^2\operatorname{arccot}(dx+c)+d\left(\frac{x}{d^2}+\frac{\left(c^2-1\right)\arctan\left(\frac{d^2x+cd}{d}\right)}{d^3}-\frac{c\log\left(d^2x^2+2cdx+c^2+1\right)}{d^3}\right)\right)bef+$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/3*a*f^2*x^3 + a*e*f*x^2 + (x^2*arccot(d*x + c) + d*(x/d^2 + (c^2 - 1)*arc
tan((d^2*x + c*d)/d)/d^3 - c*log(d^2*x^2 + 2*c*d*x + c^2 + 1)/d^3))*b*e*f +
 1/6*(2*x^3*arccot(d*x + c) + d*((d*x^2 - 4*c*x)/d^3 - 2*(c^3 - 3*c)*arctan
((d^2*x + c*d)/d)/d^4 + (3*c^2 - 1)*log(d^2*x^2 + 2*c*d*x + c^2 + 1)/d^4))*
b*f^2 + a*e^2*x + 1/2*(2*(d*x + c)*arccot(d*x + c) + log((d*x + c)^2 + 1))*
b*e^2/d
```

mupad [B] time = 0.96, size = 409, normalized size = 2.66

$$x^2\left(\frac{f\left(bf+6acf+6ade\right)}{6d}-\frac{acf^2}{d}\right)-x\left(\frac{2c\left(\frac{f\left(bf+6acf+6ade\right)}{3d}-\frac{2acf^2}{d}\right)}{d}-\frac{3ac^2f^2+12acdef+3ad^2e^2}{3d^2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] x^2*((f*(b*f + 6*a*c*f + 6*a*d*e))/(6*d) - (a*c*f^2)/d) - x*((2*c*((f*(b*f
+ 6*a*c*f + 6*a*d*e))/(3*d) - (2*a*c*f^2)/d))/d - (3*a*f^2 + 3*a*c^2*f^2 +
3*a*d^2*e^2 + 3*b*d*e*f + 12*a*c*d*e*f)/(3*d^2) + (a*f^2*(3*c^2 + 3))/(3*d^
2)) + acot(c + d*x)*((b*f^2*x^3)/3 + b*e^2*x + b*e*f*x^2) + (a*f^2*x^3)/3 +
 (log(c^2 + d^2*x^2 + 2*c*d*x + 1)*(36*b*d^5*e^2 - 12*b*d^3*f^2 + 36*b*c^2*
d^3*f^2 - 72*b*c*d^4*e*f))/(72*d^6) - (b*atan((3*d^2*((c*(c^3*f^2 - 3*c*f^2
 + 3*c*d^2*e^2 + 3*d*e*f - 3*c^2*d*e*f))/(3*d^2) + (x*(c^3*f^2 - 3*c*f^2 +
3*c*d^2*e^2 + 3*d*e*f - 3*c^2*d*e*f))/(3*d)))/(c^3*f^2 - 3*c*f^2 + 3*c*d^2*
e^2 + 3*d*e*f - 3*c^2*d*e*f))*(c^3*f^2 - 3*c*f^2 + 3*c*d^2*e^2 + 3*d*e*f -
3*c^2*d*e*f))/(3*d^3)
```

sympy [A] time = 11.14, size = 376, normalized size = 2.44

$$\begin{cases} ae^2x+aefx^2+\frac{af^2x^3}{3}+\frac{bc^3f^2\operatorname{acot}(c+dx)}{3d^3}-\frac{bc^2ef\operatorname{acot}(c+dx)}{d^2}+\frac{bc^2f^2\log\left(\frac{c}{d}+x-\frac{i}{d}\right)}{d^3}+\frac{ibc^2f^2\operatorname{acot}(c+dx)}{d^3}+\frac{bce^2\operatorname{acot}(c+dx)}{d}-\frac{2b\cdots}{\cdots} \\ (a+b\operatorname{acot}(c))\left(e^2x+efx^2+\frac{f^2x^3}{3}\right) \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Piecewise((a*e**2*x + a*e*f*x**2 + a*f**2*x**3/3 + b*c**3*f**2*acot(c + d*x
)/(3*d**3) - b*c**2*e*f*acot(c + d*x)/d**2 + b*c**2*f**2*log(c/d + x - I/d)
/d**3 + I*b*c**2*f**2*acot(c + d*x)/d**3 + b*c*e**2*acot(c + d*x)/d - 2*b*c
*e*f*log(c/d + x - I/d)/d**2 - 2*I*b*c*e*f*acot(c + d*x)/d**2 - 2*b*c*f**2*
x/(3*d**2) - b*c*f**2*acot(c + d*x)/d**3 + b*e**2*x*acot(c + d*x) + b*e*f*x
**2*acot(c + d*x) + b*f**2*x**3*acot(c + d*x)/3 + b*e**2*log(c/d + x - I/d)
/d + I*b*e**2*acot(c + d*x)/d + b*e*f*x/d + b*f**2*x**2/(6*d) + b*e*f*acot(
c + d*x)/d**2 - b*f**2*log(c/d + x - I/d)/(3*d**3) - I*b*f**2*acot(c + d*x)
/(3*d**3), Ne(d, 0)), ((a + b*acot(c))*(e**2*x + e*f*x**2 + f**2*x**3/3), T
rue))
```

3.131 $\int (e+fx)\left(a+b\cot^{-1}(c+dx)\right)\,dx$

Optimal. Leaf size=97

$$\frac{(e+fx)^2\left(a+b\cot^{-1}(c+dx)\right)}{2f}+\frac{b(de-cf)\log\left((c+dx)^2+1\right)}{2d^2}+\frac{b(-cf+de+f)(de-(c+1)f)\tan^{-1}(c+dx)}{2d^2f}+\frac{bf}{2}$$

[Out] 1/2*b*f*x/d+1/2*(f*x+e)^2*(a+b*arccot(d*x+c))/f+1/2*b*(-c*f+d*e+f)*(d*e-(1+c)*f)*arctan(d*x+c)/d^2/f+1/2*b*(-c*f+d*e)*ln(1+(d*x+c)^2)/d^2

Rubi [A] time = 0.11, antiderivative size = 97, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.375, Rules used = {5048, 4863, 702, 635, 203, 260}

$$\frac{(e+fx)^2\left(a+b\cot^{-1}(c+dx)\right)}{2f}+\frac{b(de-cf)\log\left((c+dx)^2+1\right)}{2d^2}+\frac{b(-cf+de+f)(de-(c+1)f)\tan^{-1}(c+dx)}{2d^2f}+\frac{bf}{2}$$

Antiderivative was successfully verified.

[In] Int[(e + f*x)*(a + b*ArcCot[c + d*x]),x]

[Out] (b*f*x)/(2*d) + ((e + f*x)^2*(a + b*ArcCot[c + d*x]))/(2*f) + (b*(d*e + f - c*f)*(d*e - (1 + c)*f)*ArcTan[c + d*x])/(2*d^2*f) + (b*(d*e - c*f)*Log[1 + (c + d*x)^2])/(2*d^2)

Rule 203

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

Rule 260

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

Rule 635

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> Dist[d, Int[1/(
a + c*x^2), x], x] + Dist[e, Int[x/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e
}, x] && !NiceSqrtQ[-(a*c)]
```

Rule 702

```
Int[((d_) + (e_.)*(x_))^(m_)/((a_) + (c_.)*(x_)^2), x_Symbol] :> Int[Polyno
mialDivide[(d + e*x)^m, a + c*x^2, x], x] /; FreeQ[{a, c, d, e}, x] && NeQ[
c*d^2 + a*e^2, 0] && IGtQ[m, 1] && (NeQ[d, 0] || GtQ[m, 2])
```

Rule 4863

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))*((d_) + (e_.)*(x_))^(q_.), x_Symbol]
 :> Simp[((d + e*x)^(q + 1)*(a + b*ArcCot[c*x]))/(e*(q + 1)), x] + Dist[(b*
c)/(e*(q + 1)), Int[(d + e*x)^(q + 1)/(1 + c^2*x^2), x], x] /; FreeQ[{a, b,
 c, d, e, q}, x] && NeQ[q, -1]
```

Rule 5048

```
Int[((a_.) + ArcCot[(c_) + (d_.)*(x_)]*(b_.))^(p_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cCot[x])^p, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, p}, x] && IG
```

```
tQ[p, 0]
```

Rubi steps

$$\int (e+fx)\left(a+b\cot^{-1}(c+dx)\right)\,dx=\frac{\text{Subst}\left(\int \left(\frac{de-cf}{d}+\frac{fx}{d}\right)\left(a+b\cot^{-1}(x)\right)\,dx,x,c+dx\right)}{d}$$

$$=\frac{(e+fx)^2\left(a+b\cot^{-1}(c+dx)\right)}{2f}+\frac{b\,\text{Subst}\left(\int \frac{\left(\frac{de-cf}{d}+\frac{fx}{d}\right)^2}{1+x^2}\,dx,x,c+dx\right)}{2f}$$

$$=\frac{(e+fx)^2\left(a+b\cot^{-1}(c+dx)\right)}{2f}+\frac{b\,\text{Subst}\left(\int \left(\frac{f^2}{d^2}+\frac{(de-f-cf)(de+f-cf)+2f(}{d^2\left(1+x^2\right)}\right.\right.}{2f}$$

$$=\frac{bfx}{2d}+\frac{(e+fx)^2\left(a+b\cot^{-1}(c+dx)\right)}{2f}+\frac{b\,\text{Subst}\left(\int \frac{(de-f-cf)(de+f-cf)+2f}{1+x^2}\right.}{2d^2f}$$

$$=\frac{bfx}{2d}+\frac{(e+fx)^2\left(a+b\cot^{-1}(c+dx)\right)}{2f}+\frac{(b(de-cf))\,\text{Subst}\left(\int \frac{x}{1+x^2}\,dx,\right.}{d^2}$$

$$=\frac{bfx}{2d}+\frac{(e+fx)^2\left(a+b\cot^{-1}(c+dx)\right)}{2f}+\frac{b(de+f-cf)(de-(1+c)f)\,\text{ta}}{2d^2f}$$

Mathematica [C] time = 0.09, size = 163, normalized size = 1.68

$$aex+\frac{1}{2}afx^2+\frac{be\left(\log\left(c^2+2cdx+d^2x^2+1\right)-2c\tan^{-1}(c+dx)\right)}{2d}+\frac{bf\left(\frac{1}{2}d\left(\frac{c+dx}{d}-\frac{c}{d}\right)^2\cot^{-1}(c+dx)+\frac{1}{2}d\left(-\frac{i(-c}{}\right.\right.}{d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(e + f*x)*(a + b*ArcCot[c + d*x]),x]
```

```
[Out] a*e*x + (a*f*x^2)/2 + b*e*x*ArcCot[c + d*x] + (b*f*((d*(-(c/d) + (c + d*x)/
d)^2*ArcCot[c + d*x])/2 + (d*(x/d - ((I/2)*(I - c)^2*Log[I - c - d*x])/d^2
+ ((I/2)*(I + c)^2*Log[I + c + d*x])/d^2))/2))/d + (b*e*(-2*c*ArcTan[c + d*
x] + Log[1 + c^2 + 2*c*d*x + d^2*x^2]))/(2*d)
```

fricas [A] time = 0.52, size = 110, normalized size = 1.13

$$\frac{ad^2fx^2+\left(2\,ad^2e+bdf\right)x+\left(bd^2fx^2+2\,bd^2ex\right)\text{arccot}\,(dx+c)-\left(2\,bcde-\left(bc^2-b\right)f\right)\arctan\,(dx+c)+\left(bde\right.}{2\,d^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*(a+b*arccot(d*x+c)),x, algorithm="fricas")
```

```
[Out] 1/2*(a*d^2*f*x^2 + (2*a*d^2*e + b*d*f)*x + (b*d^2*f*x^2 + 2*b*d^2*e*x)*arcc
ot(d*x + c) - (2*b*c*d*e - (b*c^2 - b)*f)*arctan(d*x + c) + (b*d*e - b*c*f)
*log(d^2*x^2 + 2*c*d*x + c^2 + 1))/d^2
```

giac [B] time = 0.34, size = 452, normalized size = 4.66

$$\frac{4\,bcf\arctan\left(\frac{1}{dx+c}\right)\tan\left(\frac{1}{2}\arctan\left(\frac{1}{dx+c}\right)\right)^3-4\,bd\arctan\left(\frac{1}{dx+c}\right)e\tan\left(\frac{1}{2}\arctan\left(\frac{1}{dx+c}\right)\right)^3+bf\arctan\left(\frac{1}{dx+c}\right)\text{ta}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*(a+b*arccot(d*x+c)),x, algorithm="giac")
```

```
[Out] 1/8*(4*b*c*f*arctan(1/(d*x + c))*tan(1/2*arctan(1/(d*x + c)))^3 - 4*b*d*arc
tan(1/(d*x + c))*e*tan(1/2*arctan(1/(d*x + c)))^3 + b*f*arctan(1/(d*x + c))
*tan(1/2*arctan(1/(d*x + c)))^4 + 4*b*c*f*log(16*tan(1/2*arctan(1/(d*x + c)
))^2/(tan(1/2*arctan(1/(d*x + c)))^4 + 2*tan(1/2*arctan(1/(d*x + c)))^2 + 1
))*tan(1/2*arctan(1/(d*x + c)))^2 - 4*b*d*e*log(16*tan(1/2*arctan(1/(d*x +
c)))^2/(tan(1/2*arctan(1/(d*x + c)))^4 + 2*tan(1/2*arctan(1/(d*x + c)))^2 +
 1))*tan(1/2*arctan(1/(d*x + c)))^2 + 4*a*c*f*tan(1/2*arctan(1/(d*x + c)))^
3 - 4*a*d*e*tan(1/2*arctan(1/(d*x + c)))^3 + a*f*tan(1/2*arctan(1/(d*x + c)
))^4 - 4*b*c*f*arctan(1/(d*x + c))*tan(1/2*arctan(1/(d*x + c))) + 4*b*d*arc
tan(1/(d*x + c))*e*tan(1/2*arctan(1/(d*x + c))) + 2*b*f*arctan(1/(d*x + c))
*tan(1/2*arctan(1/(d*x + c)))^2 - 2*b*f*tan(1/2*arctan(1/(d*x + c)))^3 - 4*
a*c*f*tan(1/2*arctan(1/(d*x + c))) + 4*a*d*e*tan(1/2*arctan(1/(d*x + c))) +
 2*a*f*tan(1/2*arctan(1/(d*x + c)))^2 + b*f*arctan(1/(d*x + c)) + 2*b*f*tan
(1/2*arctan(1/(d*x + c))) + a*f)/(d^2*tan(1/2*arctan(1/(d*x + c)))^2)
```

maple [A] time = 0.04, size = 146, normalized size = 1.51

$$\frac{a x^2 f}{2}-\frac{a f c^2}{2d^2}+aex+\frac{ace}{d}+\frac{b \operatorname{arccot}(dx+c) f x^2}{2}-\frac{b \operatorname{arccot}(dx+c) f c^2}{2d^2}+\operatorname{arccot}(dx+c) xbe+\frac{\operatorname{arccot}(dx+c) bce}{d}+\cdots$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)*(a+b*arccot(d*x+c)),x)
```

```
[Out] 1/2*a*x^2*f-1/2/d^2*a*f*c^2+a*e*x+1/d*a*c*e+1/2*b*arccot(d*x+c)*f*x^2-1/2/d
^2*b*arccot(d*x+c)*f*c^2+arccot(d*x+c)*x*b*e+1/d*arccot(d*x+c)*b*c*e+1/2*b*
f*x/d+1/2/d^2*b*c*f-1/2/d^2*b*ln(1+(d*x+c)^2)*c*f+1/2/d*b*ln(1+(d*x+c)^2)*e
-1/2/d^2*b*f*arctan(d*x+c)
```

maxima [A] time = 0.43, size = 113, normalized size = 1.16

$$\frac{1}{2}afx^2+\frac{1}{2}\left(x^2 \operatorname{arccot}(dx+c)+d\left(\frac{x}{d^2}+\frac{(c^2-1)\arctan\left(\frac{d^2x+cd}{d}\right)}{d^3}-\frac{c\log\left(d^2x^2+2cdx+c^2+1\right)}{d^3}\right)\right)bf+aex+\frac{(2(d\cdots}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

mupad [B] time = 1.45, size = 136, normalized size = 1.40

$$a\,e\,x+\frac{a\,f\,x^2}{2}+\frac{b\,e\,\ln\left(c^2+2\,c\,d\,x+d^2\,x^2+1\right)}{2\,d}+\frac{b\,f\,\mathrm{acot}(c+d\,x)}{2\,d^2}+\frac{b\,f\,x^2\,\mathrm{acot}(c+d\,x)}{2}+\frac{b\,f\,x}{2\,d}+b\,e\,x\,\mathrm{acot}(c+d\,x)-\cdots$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e + f*x)*(a + b*acot(c + d*x)),x)
```

```
[Out] a*e*x + (a*f*x^2)/2 + (b*e*log(c^2 + d^2*x^2 + 2*c*d*x + 1))/(2*d) + (b*f*a
cot(c + d*x))/(2*d^2) + (b*f*x^2*acot(c + d*x))/2 + (b*f*x)/(2*d) + b*e*x*a
cot(c + d*x) - (b*c^2*f*acot(c + d*x))/(2*d^2) - (b*c*f*log(c^2 + d^2*x^2 +
 2*c*d*x + 1))/(2*d^2) + (b*c*e*acot(c + d*x))/d
```

sympy [A] time = 4.76, size = 177, normalized size = 1.82

$$\begin{cases} aex + \frac{afx^2}{2} - \frac{bc^2f \operatorname{acot}(c+dx)}{2d^2} + \frac{bce \operatorname{acot}(c+dx)}{d} - \frac{bcf \log\left(\frac{c}{d}+x-\frac{i}{d}\right)}{d^2} - \frac{ibcf \operatorname{acot}(c+dx)}{d^2} + bex \operatorname{acot}(c+dx) + \frac{bfx^2 \operatorname{acot}(c+dx)}{2} + \\ (a + b \operatorname{acot}(c)) \left(ex + \frac{fx^2}{2}\right) \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*(a+b*acot(d*x+c)),x)
```

```
[Out] Piecewise((a*e*x + a*f*x**2/2 - b*c**2*f*acot(c + d*x)/(2*d**2) + b*c*e*aco
t(c + d*x)/d - b*c*f*log(c/d + x - I/d)/d**2 - I*b*c*f*acot(c + d*x)/d**2 +
 b*e*x*acot(c + d*x) + b*f*x**2*acot(c + d*x)/2 + b*e*log(c/d + x - I/d)/d
+ I*b*e*acot(c + d*x)/d + b*f*x/(2*d) + b*f*acot(c + d*x)/(2*d**2), Ne(d, 0
)), ((a + b*acot(c))*(e*x + f*x**2/2), True))
```

3.132 $\int \left(a+b\cot^{-1}(c+dx)\right)\,dx$

Optimal. Leaf size=38

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

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

Rubi [A] time = 0.02, antiderivative size = 38, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.300, Rules used = {5040, 4847, 260}

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

Antiderivative was successfully verified.

```
[In] Int[a + b*ArcCot[c + d*x],x]
```

```
[Out] a*x + (b*(c + d*x)*ArcCot[c + d*x])/d + (b*Log[1 + (c + d*x)^2])/(2*d)
```

Rule 260

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

Rule 4847

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b*Ar
cCot[c*x])^p, x] + Dist[b*c*p, Int[(x*(a + b*ArcCot[c*x])^(p - 1))/(1 + c^2
*x^2), x], x] /; FreeQ[{a, b, c}, x] && IGtQ[p, 0]
```

Rule 5040

```
Int[((a_.) + ArcCot[(c_) + (d_.)*(x_)]*(b_.))^(p_.), x_Symbol] :> Dist[1/d,
 Subst[Int[(a + b*ArcCot[x])^p, x], x, c + d*x], x] /; FreeQ[{a, b, c, d},
x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int \left(a+b\cot^{-1}(c+dx)\right)\,dx &= ax+b\int \cot^{-1}(c+dx)\,dx\\ &= ax+\frac{b\,\text{Subst}\left(\int \cot^{-1}(x)\,dx,x,c+dx\right)}{d}\\ &= ax+\frac{b(c+dx)\cot^{-1}(c+dx)}{d}+\frac{b\,\text{Subst}\left(\int \frac{x}{1+x^2}\,dx,x,c+dx\right)}{d}\\ &= ax+\frac{b(c+dx)\cot^{-1}(c+dx)}{d}+\frac{b\log\left(1+(c+dx)^2\right)}{2d}\end{aligned}$$

Mathematica [A] time = 0.01, size = 49, normalized size = 1.29

$$ax+\frac{b\left(\log\left(c^2+2cdx+d^2x^2+1\right)-2c\tan^{-1}(c+dx)\right)}{2d}+bx\cot^{-1}(c+dx)$$

Antiderivative was successfully verified.

```
[In] Integrate[a + b*ArcCot[c + d*x],x]
```

```
[Out] a*x + b*x*ArcCot[c + d*x] + (b*(-2*c*ArcTan[c + d*x] + Log[1 + c^2 + 2*c*d*
x + d^2*x^2]))/(2*d)
```

fricas [A] time = 0.69, size = 52, normalized size = 1.37

$$\frac{2\,bdx\,\mathrm{arccot}\left(dx+c\right)+2\,adx-2\,bc\,\arctan\left(dx+c\right)+b\log\left(d^2x^2+2\,cdx+c^2+1\right)}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/2*(2*b*d*x*arccot(d*x + c) + 2*a*d*x - 2*b*c*arctan(d*x + c) + b*log(d^2*
x^2 + 2*c*d*x + c^2 + 1))/d
```

giac [B] time = 0.21, size = 116, normalized size = 3.05

$$ax-\frac{\left(\arctan\left(\frac{1}{dx+c}\right)\tan\left(\frac{1}{2}\arctan\left(\frac{1}{dx+c}\right)\right)^2+\log\left(\frac{16\tan\left(\frac{1}{2}\arctan\left(\frac{1}{dx+c}\right)\right)^2}{\tan\left(\frac{1}{2}\arctan\left(\frac{1}{dx+c}\right)\right)^4+2\tan\left(\frac{1}{2}\arctan\left(\frac{1}{dx+c}\right)\right)^2+1}\right)\tan\left(\frac{1}{2}\arctan\left(\frac{1}{dx+\cdots}\right.\right.}{2\,d\tan\left(\frac{1}{2}\arctan\left(\frac{1}{dx+c}\right)\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] a*x - 1/2*(arctan(1/(d*x + c))*tan(1/2*arctan(1/(d*x + c)))^2 + log(16*tan(
1/2*arctan(1/(d*x + c)))^2/(tan(1/2*arctan(1/(d*x + c)))^4 + 2*tan(1/2*arct
an(1/(d*x + c)))^2 + 1))*tan(1/2*arctan(1/(d*x + c))) - arctan(1/(d*x + c))
)*b/(d*tan(1/2*arctan(1/(d*x + c))))
```

maple [A] time = 0.04, size = 42, normalized size = 1.11

$$ax+b\,\mathrm{arccot}\left(dx+c\right)x+\frac{b\,\mathrm{arccot}\left(dx+c\right)c}{d}+\frac{b\ln\left(1+\left(dx+c\right)^2\right)}{2d}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

maxima [A] time = 0.31, size = 34, normalized size = 0.89

$$ax+\frac{\left(2\left(dx+c\right)\mathrm{arccot}\left(dx+c\right)+\log\left(\left(dx+c\right)^2+1\right)\right)b}{2\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

mupad [B] time = 1.29, size = 48, normalized size = 1.26

$$a\,x+\frac{\frac{b\,\ln\left(c^2+2\,c\,d\,x+d^2\,x^2+1\right)}{2}+b\,c\,\mathrm{acot}\left(c+d\,x\right)}{d}+b\,x\,\mathrm{acot}\left(c+d\,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

sympy [A] time = 0.39, size = 51, normalized size = 1.34

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

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] a*x + b*Piecewise((c*acot(c + d*x)/d + x*acot(c + d*x) + log(c**2 + 2*c*d*x
 + d**2*x**2 + 1)/(2*d), Ne(d, 0)), (x*acot(c), True))
```

3.133 $\int \frac{a+b\cot^{-1}(c+dx)}{e+fx}\,dx$

Optimal. Leaf size=162

$$\frac{\left(a+b\cot^{-1}(c+dx)\right)\log\left(\frac{2d(e+fx)}{(1-i(c+dx))(-cf+de+if)}\right)}{f}-\frac{\log\left(\frac{2}{1-i(c+dx)}\right)\left(a+b\cot^{-1}(c+dx)\right)}{f}+\frac{ib\mathrm{Li}_2\left(1-\frac{2d(e+fx)}{(de-cf+if)(1-i(c\cdot}\right.}{2f}$$

```
[Out] -(a+b*arccot(d*x+c))*ln(2/(1-I*(d*x+c)))/f+(a+b*arccot(d*x+c))*ln(2*d*(f*x+
e)/(d*e+I*f-c*f)/(1-I*(d*x+c)))/f-1/2*I*b*polylog(2,1-2/(1-I*(d*x+c)))/f+1/
2*I*b*polylog(2,1-2*d*(f*x+e)/(d*e+I*f-c*f)/(1-I*(d*x+c)))/f
```

Rubi [A] time = 0.15, antiderivative size = 162, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}} = 0.278$, Rules used = {5048, 4857, 2402, 2315, 2447}

$$\frac{ib\text{PolyLog}\left(2,1-\frac{2d(e+fx)}{(1-i(c+dx))(-cf+de+if)}\right)}{2f}-\frac{ib\text{PolyLog}\left(2,1-\frac{2}{1-i(c+dx)}\right)}{2f}+\frac{\left(a+b\cot^{-1}(c+dx)\right)\log\left(\frac{2d(e+fx)}{(1-i(c+dx))(-cf+\cdots}\right.}{f}$$

Antiderivative was successfully verified.

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

```
[Out] -(((a + b*ArcCot[c + d*x])*Log[2/(1 - I*(c + d*x))])/f) + ((a + b*ArcCot[c
+ d*x])*Log[(2*d*(e + f*x))/((d*e + I*f - c*f)*(1 - I*(c + d*x)))])/f - ((I
/2)*b*PolyLog[2, 1 - 2/(1 - I*(c + d*x))])/f + ((I/2)*b*PolyLog[2, 1 - (2*d
*(e + f*x))/((d*e + I*f - c*f)*(1 - I*(c + d*x)))])/f
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2402

```
Int[Log[(c_.)/((d_) + (e_.)*(x_))]/((f_) + (g_.)*(x_)^2), x_Symbol] :> -Dis
t[e/g, Subst[Int[Log[2*d*x]/(1 - 2*d*x), x], x, 1/(d + e*x)], x] /; FreeQ[{
c, d, e, f, g}, x] && EqQ[c, 2*d] && EqQ[e^2*f + d^2*g, 0]
```

Rule 2447

```
Int[Log[u_]*(Pq_)^(m_.), x_Symbol] :> With[{C = FullSimplify[(Pq^m*(1 - u))
/D[u, x]]}, Simp[C*PolyLog[2, 1 - u], x] /; FreeQ[C, x]] /; IntegerQ[m] &&
PolyQ[Pq, x] && RationalFunctionQ[u, x] && LeQ[RationalFunctionExponents[u,
 x][[2]], Expon[Pq, x]]
```

Rule 4857

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))/((d_) + (e_.)*(x_)), x_Symbol] :> -S
imp[((a + b*ArcCot[c*x])*Log[2/(1 - I*c*x)])/e, x] + (-Dist[(b*c)/e, Int[Lo
g[2/(1 - I*c*x)]/(1 + c^2*x^2), x], x] + Dist[(b*c)/e, Int[Log[(2*c*(d + e*
x))/((c*d + I*e)*(1 - I*c*x))]/(1 + c^2*x^2), x], x] + Simp[((a + b*ArcCot[
c*x])*Log[(2*c*(d + e*x))/((c*d + I*e)*(1 - I*c*x))])/e, x]) /; FreeQ[{a, b
, c, d, e}, x] && NeQ[c^2*d^2 + e^2, 0]
```

Rule 5048

```
Int[((a_.) + ArcCot[(c_) + (d_.)*(x_)]*(b_.))^(p_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
```

```
cCot[x])^p, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, p}, x] && IG
tQ[p, 0]
```

Rubi steps

$$\int \frac{a+b\cot^{-1}(c+dx)}{e+fx}\,dx = \frac{\text{Subst}\left(\int \frac{a+b\cot^{-1}(x)}{\frac{de-cf}{d}+\frac{fx}{d}}\,dx, x, c+dx\right)}{d}$$

$$= -\frac{\left(a+b\cot^{-1}(c+dx)\right)\log\left(\frac{2}{1-i(c+dx)}\right)}{f} + \frac{\left(a+b\cot^{-1}(c+dx)\right)\log\left(\frac{2d(e+fx)}{(de+if-cf)(1-i(c+dx))}\right)}{f}$$

$$= -\frac{\left(a+b\cot^{-1}(c+dx)\right)\log\left(\frac{2}{1-i(c+dx)}\right)}{f} + \frac{\left(a+b\cot^{-1}(c+dx)\right)\log\left(\frac{2d(e+fx)}{(de+if-cf)(1-i(c+dx))}\right)}{f}$$

$$= -\frac{\left(a+b\cot^{-1}(c+dx)\right)\log\left(\frac{2}{1-i(c+dx)}\right)}{f} + \frac{\left(a+b\cot^{-1}(c+dx)\right)\log\left(\frac{2d(e+fx)}{(de+if-cf)(1-i(c+dx))}\right)}{f}$$

Mathematica [A] time = 0.11, size = 304, normalized size = 1.88

$$\frac{a\log(f(c+dx)-cf+de)}{f} - \frac{ib\text{Li}_2\left(\frac{de-cf+f(c+dx)}{de+(i-c)f}\right)}{2f} + \frac{ib\text{Li}_2\left(\frac{de-cf+f(c+dx)}{de-(c+i)f}\right)}{2f} - \frac{ib\log\left(\frac{f(-c-dx+i)}{de+(-c+i)f}\right)\log(f(c+dx)-cf+d}{2f}$$

Warning: Unable to verify antiderivative.

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

```
[Out] (a*Log[d*e - c*f + f*(c + d*x)])/f - ((I/2)*b*Log[(f*(I - c - d*x))/(d*e +
(I - c)*f)]*Log[d*e - c*f + f*(c + d*x)])/f + ((I/2)*b*Log[-((I - c - d*x)/
(c + d*x))]*Log[d*e - c*f + f*(c + d*x)])/f + ((I/2)*b*Log[-((f*(I + c + d*
x))/(d*e - (I + c)*f))]*Log[d*e - c*f + f*(c + d*x)])/f - ((I/2)*b*Log[(I +
 c + d*x)/(c + d*x)]*Log[d*e - c*f + f*(c + d*x)])/f - ((I/2)*b*PolyLog[2,
(d*e - c*f + f*(c + d*x))/(d*e + (I - c)*f)])/f + ((I/2)*b*PolyLog[2, (d*e
- c*f + f*(c + d*x))/(d*e - (I + c)*f)])/f
```

fricas [F] time = 0.52, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{b\,\text{arccot}\,(dx+c)+a}{fx+e}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integral((b*arccot(d*x + c) + a)/(f*x + e), x)
```

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

$$\int \frac{b\,\text{arccot}\,(dx+c)+a}{fx+e}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

maple [A] time = 0.07, size = 224, normalized size = 1.38

$$\frac{a\ln\left(f\left(dx+c\right)-cf+de\right)}{f}+\frac{b\ln\left(f\left(dx+c\right)-cf+de\right)\operatorname{arccot}\left(dx+c\right)}{f}-\frac{ib\ln\left(f\left(dx+c\right)-cf+de\right)\ln\left(\frac{if-f(dx+}{-cf+de+}\right.}{2f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arccot(d*x+c))/(f*x+e),x)
[Out] a*ln(f*(d*x+c)-c*f+d*e)/f+b*ln(f*(d*x+c)-c*f+d*e)/f*arccot(d*x+c)-1/2*I*b*l
n(f*(d*x+c)-c*f+d*e)/f*ln((I*f-f*(d*x+c))/(d*e+I*f-c*f))+1/2*I*b*ln(f*(d*x+
c)-c*f+d*e)/f*ln((I*f+f*(d*x+c))/(I*f+c*f-d*e))-1/2*I*b/f*dilog((I*f-f*(d*x
+c))/(d*e+I*f-c*f))+1/2*I*b/f*dilog((I*f+f*(d*x+c))/(I*f+c*f-d*e))
```

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

$$2b\int\frac{\arctan\left(1,dx+c\right)}{2\left(fx+e\right)}\,dx+\frac{a\log\left(fx+e\right)}{f}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arccot(d*x+c))/(f*x+e),x, algorithm="maxima")
[Out] 2*b*integrate(1/2*arctan2(1, d*x + c)/(f*x + e), x) + a*log(f*x + e)/f
```

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

$$\int\frac{a+b\,\mathrm{acot}\left(c+d\,x\right)}{e+f\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*acot(c + d*x))/(e + f*x),x)
[Out] int((a + b*acot(c + d*x))/(e + f*x), x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*acot(d*x+c))/(f*x+e),x)
[Out] Timed out
```

3.134 $\int \frac{a+b\cot^{-1}(c+dx)}{(e+fx)^2}\,dx$

Optimal. Leaf size=153

$$-\frac{a+b\cot^{-1}(c+dx)}{f(e+fx)}+\frac{bd\log\left(c^2+2cdx+d^2x^2+1\right)}{2\left(\left(c^2+1\right)f^2-2cdef+d^2e^2\right)}-\frac{bd\log(e+fx)}{\left(c^2+1\right)f^2-2cdef+d^2e^2}-\frac{bd(de-cf)\tan^{-1}(c+dx)}{f\left(\left(c^2+1\right)f^2-2cdef+d^2e^2\right)}$$

```
[Out] (-a-b*arccot(d*x+c))/f/(f*x+e)-b*d*(-c*f+d*e)*arctan(d*x+c)/f/(d^2*e^2-2*c*
d*e*f+(c^2+1)*f^2)-b*d*ln(f*x+e)/(d^2*e^2-2*c*d*e*f+(c^2+1)*f^2)+1/2*b*d*ln
(d^2*x^2+2*c*d*x+c^2+1)/(d^2*e^2-2*c*d*e*f+(c^2+1)*f^2)
```

Rubi [A] time = 0.11, antiderivative size = 153, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 8, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.444, Rules used = {5046, 1982, 705, 31, 634, 618, 204, 628}

$$-\frac{a+b\cot^{-1}(c+dx)}{f(e+fx)}+\frac{bd\log\left(c^2+2cdx+d^2x^2+1\right)}{2\left(\left(c^2+1\right)f^2-2cdef+d^2e^2\right)}-\frac{bd\log(e+fx)}{\left(c^2+1\right)f^2-2cdef+d^2e^2}-\frac{bd(de-cf)\tan^{-1}(c+dx)}{f\left(\left(c^2+1\right)f^2-2cdef+d^2e^2\right)}$$

Antiderivative was successfully verified.

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

```
[Out] -((a + b*ArcCot[c + d*x])/(f*(e + f*x))) - (b*d*(d*e - c*f)*ArcTan[c + d*x]
)/(f*(d^2*e^2 - 2*c*d*e*f + (1 + c^2)*f^2)) - (b*d*Log[e + f*x])/(d^2*e^2 -
 2*c*d*e*f + (1 + c^2)*f^2) + (b*d*Log[1 + c^2 + 2*c*d*x + d^2*x^2])/(2*(d^
2*e^2 - 2*c*d*e*f + (1 + c^2)*f^2))
```

Rule 31

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

Rule 204

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

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

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

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] &&  !NiceSqrtQ[b^2 - 4*a*c]
```

Rule 705

```
Int[1/(((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)), x_Symbol]
 :> Dist[e^2/(c*d^2 - b*d*e + a*e^2), Int[1/(d + e*x), x], x] + Dist[1/(c*d
^2 - b*d*e + a*e^2), Int[(c*d - b*e - c*e*x)/(a + b*x + c*x^2), x], x] /; F
reeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^
2, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 1982

```
Int[(u_)^(m_.)*(v_)^(p_.), x_Symbol] :> Int[ExpandToSum[u, x]^m*ExpandToSum
[v, x]^p, x] /; FreeQ[{m, p}, x] && LinearQ[u, x] && QuadraticQ[v, x] &&  !
(LinearMatchQ[u, x] && QuadraticMatchQ[v, x])
```

Rule 5046

```
Int[((a_.) + ArcCot[(c_) + (d_.)*(x_)]*(b_.))^(p_.)*((e_.) + (f_.)*(x_))^(m
_), x_Symbol] :> Simp[((e + f*x)^(m + 1)*(a + b*ArcCot[c + d*x])^p)/(f*(m +
 1)), x] + Dist[(b*d*p)/(f*(m + 1)), Int[((e + f*x)^(m + 1)*(a + b*ArcCot[c
 + d*x])^(p - 1))/(1 + (c + d*x)^2), x], x] /; FreeQ[{a, b, c, d, e, f}, x]
 && IGtQ[p, 0] && ILtQ[m, -1]
```

Rubi steps

$$\begin{aligned}
\int \frac{a+b\cot^{-1}(c+dx)}{(e+fx)^2}\,dx &= -\frac{a+b\cot^{-1}(c+dx)}{f(e+fx)} - \frac{(bd)\int \frac{1}{(e+fx)\left(1+(c+dx)^2\right)}\,dx}{f} \\
&= -\frac{a+b\cot^{-1}(c+dx)}{f(e+fx)} - \frac{(bd)\int \frac{1}{(e+fx)\left(1+c^2+2cdx+d^2x^2\right)}\,dx}{f} \\
&= -\frac{a+b\cot^{-1}(c+dx)}{f(e+fx)} - \frac{(bd)\int \frac{d^2e-2cdf-d^2fx}{1+c^2+2cdx+d^2x^2}\,dx}{f\left(d^2e^2-2cdef+\left(1+c^2\right)f^2\right)} - \frac{(bdf)\int \frac{1}{e+fx}\,dx}{d^2e^2-2cdef+\left(1+c^2\right)f \\
&= -\frac{a+b\cot^{-1}(c+dx)}{f(e+fx)} - \frac{bd\log(e+fx)}{d^2e^2-2cdef+\left(1+c^2\right)f^2} + \frac{(bd)\int \frac{2cd+2d^2x}{1+c^2+2cdx+d^2x^2}\,dx}{2\left(d^2e^2-2cdef+\left(1+c^2\right)f \\
&= -\frac{a+b\cot^{-1}(c+dx)}{f(e+fx)} - \frac{bd\log(e+fx)}{d^2e^2-2cdef+\left(1+c^2\right)f^2} + \frac{bd\log\left(1+c^2+2cdx+d^2x^2}{2\left(d^2e^2-2cdef+\left(1+c^2\right)f \\
&= -\frac{a+b\cot^{-1}(c+dx)}{f(e+fx)} - \frac{bd(de-cf)\tan^{-1}(c+dx)}{f\left(d^2e^2-2cdef+\left(1+c^2\right)f^2\right)} - \frac{bd\log(e+fx)}{d^2e^2-2cdef+\left(1+c^2\right)f
\end{aligned}$$

Mathematica [C] time = 0.20, size = 118, normalized size = 0.77

$$\frac{-\frac{a+b\cot^{-1}(c+dx)}{e+fx}+\frac{bd((-icf+ide+f)\log(-c-dx+i)+(icf-ide+f)\log(c+dx+i)-2f\log(d(e+fx)))}{2\left(\left(c^2+1\right)f^2-2cdef+d^2e^2\right)}}{f}$$

Antiderivative was successfully verified.

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

```
[Out] (-((a + b*ArcCot[c + d*x])/(e + f*x)) + (b*d*((I*d*e + f - I*c*f)*Log[I - c
 - d*x] + ((-I)*d*e + f + I*c*f)*Log[I + c + d*x] - 2*f*Log[d*(e + f*x)]))/
(2*(d^2*e^2 - 2*c*d*e*f + (1 + c^2)*f^2)))/f
```

fricas [A] time = 1.12, size = 223, normalized size = 1.46

$$-\frac{2\,ad^2e^2 - 4\,acdef + 2\left(ac^2+a\right)f^2 + 2\left(bd^2e^2 - 2\,bcdef + \left(bc^2+b\right)f^2\right)\operatorname{arccot}(dx+c) + 2\left(bd^2e^2 - bcdef + (bd^2\right.}{2\left(d^2e^3f - 2\,cde^2f^2 + \left(c^2+1\right)ef^3 + \right.}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/2*(2*a*d^2*e^2 - 4*a*c*d*e*f + 2*(a*c^2 + a)*f^2 + 2*(b*d^2*e^2 - 2*b*c*
d*e*f + (b*c^2 + b)*f^2)*arccot(d*x + c) + 2*(b*d^2*e^2 - b*c*d*e*f + (b*d^
2*e*f - b*c*d*f^2)*x)*arctan(d*x + c) - (b*d*f^2*x + b*d*e*f)*log(d^2*x^2 +
 2*c*d*x + c^2 + 1) + 2*(b*d*f^2*x + b*d*e*f)*log(f*x + e))/(d^2*e^3*f - 2*
c*d*e^2*f^2 + (c^2 + 1)*e*f^3 + (d^2*e^2*f^2 - 2*c*d*e*f^3 + (c^2 + 1)*f^4)
*x)
```

giac [B] time = 0.87, size = 1278, normalized size = 8.35

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/2*(2*b*c*f*arctan(1/(d*x + c))*tan(1/2*arctan(1/(d*x + c)))^2 - 2*b*d*ar
ctan(1/(d*x + c))*e*tan(1/2*arctan(1/(d*x + c)))^2 + 2*b*c*f*log(4*(4*c^2*f
^2*tan(1/2*arctan(1/(d*x + c)))^2 - 8*c*d*f*e*tan(1/2*arctan(1/(d*x + c)))^
2 + 4*c*f^2*tan(1/2*arctan(1/(d*x + c)))^3 - 4*d*f*e*tan(1/2*arctan(1/(d*x
+ c)))^3 + f^2*tan(1/2*arctan(1/(d*x + c)))^4 + 4*d^2*e^2*tan(1/2*arctan(1/
(d*x + c)))^2 - 4*c*f^2*tan(1/2*arctan(1/(d*x + c))) + 4*d*f*e*tan(1/2*arct
an(1/(d*x + c))) - 2*f^2*tan(1/2*arctan(1/(d*x + c)))^2 + f^2)/(tan(1/2*arc
tan(1/(d*x + c)))^4 + 2*tan(1/2*arctan(1/(d*x + c)))^2 + 1))*tan(1/2*arctan
(1/(d*x + c))) - 2*b*d*e*log(4*(4*c^2*f^2*tan(1/2*arctan(1/(d*x + c)))^2 -
8*c*d*f*e*tan(1/2*arctan(1/(d*x + c)))^2 + 4*c*f^2*tan(1/2*arctan(1/(d*x +
c)))^3 - 4*d*f*e*tan(1/2*arctan(1/(d*x + c)))^3 + f^2*tan(1/2*arctan(1/(d*x
 + c)))^4 + 4*d^2*e^2*tan(1/2*arctan(1/(d*x + c)))^2 - 4*c*f^2*tan(1/2*arct
an(1/(d*x + c))) + 4*d*f*e*tan(1/2*arctan(1/(d*x + c))) - 2*f^2*tan(1/2*arc
tan(1/(d*x + c)))^2 + f^2)/(tan(1/2*arctan(1/(d*x + c)))^4 + 2*tan(1/2*arct
an(1/(d*x + c)))^2 + 1))*tan(1/2*arctan(1/(d*x + c))) + 2*a*c*f*tan(1/2*arc
tan(1/(d*x + c)))^2 - 2*a*d*e*tan(1/2*arctan(1/(d*x + c)))^2 + b*f*log(4*(4
*c^2*f^2*tan(1/2*arctan(1/(d*x + c)))^2 - 8*c*d*f*e*tan(1/2*arctan(1/(d*x +
 c)))^2 + 4*c*f^2*tan(1/2*arctan(1/(d*x + c)))^3 - 4*d*f*e*tan(1/2*arctan(1
/(d*x + c)))^3 + f^2*tan(1/2*arctan(1/(d*x + c)))^4 + 4*d^2*e^2*tan(1/2*arc
tan(1/(d*x + c)))^2 - 4*c*f^2*tan(1/2*arctan(1/(d*x + c))) + 4*d*f*e*tan(1/
2*arctan(1/(d*x + c))) - 2*f^2*tan(1/2*arctan(1/(d*x + c)))^2 + f^2)/(tan(1
/2*arctan(1/(d*x + c)))^4 + 2*tan(1/2*arctan(1/(d*x + c)))^2 + 1))*tan(1/2*
arctan(1/(d*x + c)))^2 - 2*b*c*f*arctan(1/(d*x + c)) + 2*b*d*arctan(1/(d*x
+ c))*e - 4*b*f*arctan(1/(d*x + c))*tan(1/2*arctan(1/(d*x + c))) - 2*a*c*f
+ 2*a*d*e - b*f*log(4*(4*c^2*f^2*tan(1/2*arctan(1/(d*x + c)))^2 - 8*c*d*f*e
*tan(1/2*arctan(1/(d*x + c)))^2 + 4*c*f^2*tan(1/2*arctan(1/(d*x + c)))^3 -
4*d*f*e*tan(1/2*arctan(1/(d*x + c)))^3 + f^2*tan(1/2*arctan(1/(d*x + c)))^4
 + 4*d^2*e^2*tan(1/2*arctan(1/(d*x + c)))^2 - 4*c*f^2*tan(1/2*arctan(1/(d*x
 + c))) + 4*d*f*e*tan(1/2*arctan(1/(d*x + c))) - 2*f^2*tan(1/2*arctan(1/(d*
x + c)))^2 + f^2)/(tan(1/2*arctan(1/(d*x + c)))^4 + 2*tan(1/2*arctan(1/(d*x
 + c)))^2 + 1)) - 4*a*f*tan(1/2*arctan(1/(d*x + c))))*d/(2*c^3*f^3*tan(1/2*
arctan(1/(d*x + c))) - 6*c^2*d*f^2*e*tan(1/2*arctan(1/(d*x + c))) + c^2*f^3
*tan(1/2*arctan(1/(d*x + c)))^2 - 2*c*d*f^2*e*tan(1/2*arctan(1/(d*x + c)))^
2 + 6*c*d^2*f*e^2*tan(1/2*arctan(1/(d*x + c))) + d^2*f*e^2*tan(1/2*arctan(1
/(d*x + c)))^2 - c^2*f^3 + 2*c*d*f^2*e + 2*c*f^3*tan(1/2*arctan(1/(d*x + c)
)) - 2*d^3*e^3*tan(1/2*arctan(1/(d*x + c))) - 2*d*f^2*e*tan(1/2*arctan(1/(d
*x + c))) + f^3*tan(1/2*arctan(1/(d*x + c)))^2 - d^2*f*e^2 - f^3)
```

maple [A] time = 0.05, size = 206, normalized size = 1.35

$$-\frac{da}{\left(dfx+de\right)f}-\frac{db\,\mathrm{arccot}\,(dx+c)}{\left(dfx+de\right)f}-\frac{db\ln\left(f(dx+c)-cf+de\right)}{c^2f^2-2cdef+d^2e^2+f^2}+\frac{db\ln\left(1+(dx+c)^2\right)}{2c^2f^2-4cdef+2d^2e^2+2f^2}+\frac{db\arctan}{c^2f^2-2cdef}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -d*a/(d*f*x+d*e)/f-d*b/(d*f*x+d*e)/f*arccot(d*x+c)-d*b/(c^2*f^2-2*c*d*e*f+d
^2*e^2+f^2)*ln(f*(d*x+c)-c*f+d*e)+1/2*d*b/(c^2*f^2-2*c*d*e*f+d^2*e^2+f^2)*l
n(1+(d*x+c)^2)+d*b/(c^2*f^2-2*c*d*e*f+d^2*e^2+f^2)*arctan(d*x+c)*c-d^2*b/f/
(c^2*f^2-2*c*d*e*f+d^2*e^2+f^2)*arctan(d*x+c)*e
```

maxima [A] time = 0.44, size = 177, normalized size = 1.16

$$-\frac{1}{2}\left(d\left(\frac{2\left(d^2e-cdf\right)\arctan\left(\frac{d^2x+cd}{d}\right)}{\left(d^2e^2f-2\,cdef^2+\left(c^2+1\right)f^3\right)d}-\frac{\log\left(d^2x^2+2\,cdx+c^2+1\right)}{d^2e^2-2\,cdef+\left(c^2+1\right)f^2}+\frac{2\,\log\left(fx+e\right)}{d^2e^2-2\,cdef+\left(c^2+1\right)f^2}\right)+\frac{2\,\mathrm{arcc}}{f^2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

mupad [B] time = 2.08, size = 128, normalized size = 0.84

$$-\frac{a}{x\,f^2+e\,f}-\frac{b\,\mathrm{acot}\,(c+d\,x)}{f\,\left(e+f\,x\right)}-\frac{b\,d\,\ln\left(e+f\,x\right)}{d^2\,e^2-2\,c\,d\,e\,f+\left(c^2+1\right)\,f^2}+\frac{b\,d\,\ln\,(c+d\,x-\mathrm{i})\,1\mathrm{i}}{2\,f\,\left(d\,e-c\,f+f\,1\mathrm{i}\right)}+\frac{b\,d\,\ln\,(c+d\,x+1\mathrm{i})}{2\,f\,\left(f-c\,f\,1\mathrm{i}+d\,e\,1\mathrm{i}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] (b*d*log(c + d*x - 1i)*1i)/(2*f*(f*1i - c*f + d*e)) - (b*acot(c + d*x))/(f*
(e + f*x)) - (b*d*log(e + f*x))/(f^2*(c^2 + 1) + d^2*e^2 - 2*c*d*e*f) - a/(
e*f + f^2*x) + (b*d*log(c + d*x + 1i))/(2*f*(f - c*f*1i + d*e*1i))
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Timed out
```

3.135 $\int \frac{a+b\cot^{-1}(c+dx)}{(e+fx)^3}\,dx$

Optimal. Leaf size=228

$$-\frac{a+b\cot^{-1}(c+dx)}{2f(e+fx)^2}+\frac{bd^2(de-cf)\log\left(c^2+2cdx+d^2x^2+1\right)}{2\left(\left(c^2+1\right)f^2-2cdef+d^2e^2\right)^2}+\frac{bd}{2(e+fx)\left(\left(c^2+1\right)f^2-2cdef+d^2e^2\right)}-\frac{bd^2(de\ldots}{\left(\left(c^2+1\right)\ldots}$$

```
[Out] 1/2*b*d/(d^2*e^2-2*c*d*e*f+(c^2+1)*f^2)/(f*x+e)+1/2*(-a-b*arccot(d*x+c))/f/
(f*x+e)^2-1/2*b*d^2*(-c*f+d*e+f)*(d*e-(1+c)*f)*arctan(d*x+c)/f/(d^2*e^2-2*c
*d*e*f+(c^2+1)*f^2)^2-b*d^2*(-c*f+d*e)*ln(f*x+e)/(d^2*e^2-2*c*d*e*f+(c^2+1)
*f^2)^2+1/2*b*d^2*(-c*f+d*e)*ln(d^2*x^2+2*c*d*x+c^2+1)/(d^2*e^2-2*c*d*e*f+(
c^2+1)*f^2)^2
```

Rubi [A] time = 0.28, antiderivative size = 228, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 8, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.444, Rules used = {5046, 1982, 709, 800, 634, 618, 204, 628}

$$-\frac{a+b\cot^{-1}(c+dx)}{2f(e+fx)^2}+\frac{bd^2(de-cf)\log\left(c^2+2cdx+d^2x^2+1\right)}{2\left(\left(c^2+1\right)f^2-2cdef+d^2e^2\right)^2}+\frac{bd}{2(e+fx)\left(\left(c^2+1\right)f^2-2cdef+d^2e^2\right)}-\frac{bd^2(de\ldots}{\left(\left(c^2+1\right)\ldots}$$

Antiderivative was successfully verified.

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

```
[Out] (b*d)/(2*(d^2*e^2 - 2*c*d*e*f + (1 + c^2)*f^2)*(e + f*x)) - (a + b*ArcCot[c
 + d*x])/(2*f*(e + f*x)^2) - (b*d^2*(d*e + f - c*f)*(d*e - (1 + c)*f)*ArcTa
n[c + d*x])/(2*f*(d^2*e^2 - 2*c*d*e*f + (1 + c^2)*f^2)^2) - (b*d^2*(d*e - c
*f)*Log[e + f*x])/(d^2*e^2 - 2*c*d*e*f + (1 + c^2)*f^2)^2 + (b*d^2*(d*e - c
*f)*Log[1 + c^2 + 2*c*d*x + d^2*x^2])/(2*(d^2*e^2 - 2*c*d*e*f + (1 + c^2)*f
^2)^2)
```

Rule 204

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

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

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

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] &&  !NiceSqrtQ[b^2 - 4*a*c]
```

Rule 709

```
Int[((d_.) + (e_.)*(x_))^(m_)/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol
] :> Simp[(e*(d + e*x)^(m + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dis
t[1/(c*d^2 - b*d*e + a*e^2), Int[((d + e*x)^(m + 1)*Simp[c*d - b*e - c*e*x,
 x])/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, m}, x] && NeQ[b^2 -
 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d - b*e, 0] && LtQ[m
, -1]
```

Rule 800

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a
+ b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*
c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && IntegerQ[m]
```

Rule 1982

```
Int[(u_)^(m_.)*(v_)^(p_.), x_Symbol] :> Int[ExpandToSum[u, x]^m*ExpandToSum
[v, x]^p, x] /; FreeQ[{m, p}, x] && LinearQ[u, x] && QuadraticQ[v, x] &&  !
(LinearMatchQ[u, x] && QuadraticMatchQ[v, x])
```

Rule 5046

```
Int[((a_.) + ArcCot[(c_) + (d_.)*(x_)]*(b_.))^(p_.)*((e_.) + (f_.)*(x_))^(m
_), x_Symbol] :> Simp[((e + f*x)^(m + 1)*(a + b*ArcCot[c + d*x])^p)/(f*(m +
 1)), x] + Dist[(b*d*p)/(f*(m + 1)), Int[((e + f*x)^(m + 1)*(a + b*ArcCot[c
 + d*x])^(p - 1))/(1 + (c + d*x)^2), x], x] /; FreeQ[{a, b, c, d, e, f}, x]
 && IGtQ[p, 0] && ILtQ[m, -1]
```

Rubi steps

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

$$= -\frac{a+b\cot^{-1}(c+dx)}{2f(e+fx)^2} - \frac{(bd)\int \frac{1}{(e+fx)^2\left(1+c^2+2cdx+d^2x^2\right)}\,dx}{2f}$$

$$= \frac{bd}{2\left(d^2e^2-2cdef+\left(1+c^2\right)f^2\right)(e+fx)} - \frac{a+b\cot^{-1}(c+dx)}{2f(e+fx)^2} - \frac{(bd)\int \frac{d(de-2c\ldots}{(e+fx)(1+c^2\ldots}}{2f\left(d^2e^2-2cdef\ldots\right.}$$

$$= \frac{bd}{2\left(d^2e^2-2cdef+\left(1+c^2\right)f^2\right)(e+fx)} - \frac{a+b\cot^{-1}(c+dx)}{2f(e+fx)^2} - \frac{(bd)\int \left(\frac{2df\ldots}{\left(d^2e^2-2cdef\ldots\right.}\right.}{\ldots}$$

$$= \frac{bd}{2\left(d^2e^2-2cdef+\left(1+c^2\right)f^2\right)(e+fx)} - \frac{a+b\cot^{-1}(c+dx)}{2f(e+fx)^2} - \frac{bd^2(de-cf)\log\ldots}{\left(d^2e^2-2cdef+\ldots\right.}$$

$$= \frac{bd}{2\left(d^2e^2-2cdef+\left(1+c^2\right)f^2\right)(e+fx)} - \frac{a+b\cot^{-1}(c+dx)}{2f(e+fx)^2} - \frac{bd^2(de-cf)\log\ldots}{\left(d^2e^2-2cdef+\ldots\right.}$$

$$= \frac{bd}{2\left(d^2e^2-2cdef+\left(1+c^2\right)f^2\right)(e+fx)} - \frac{a+b\cot^{-1}(c+dx)}{2f(e+fx)^2} - \frac{bd^2(de-cf)\log\ldots}{\left(d^2e^2-2cdef+\ldots\right.}$$

$$= \frac{bd}{2\left(d^2e^2-2cdef+\left(1+c^2\right)f^2\right)(e+fx)} - \frac{a+b\cot^{-1}(c+dx)}{2f(e+fx)^2} - \frac{bd^2(de-f-cf)(\ldots}{2f\left(d^2e^2-\ldots\right.}$$

Mathematica [C] time = 0.62, size = 180, normalized size = 0.79

$$\frac{-\frac{a+b\cot^{-1}(c+dx)}{(e+fx)^2}+\frac{bdf}{(e+fx)\left(\left(c^2+1\right)f^2-2cdef+d^2e^2\right)}-\frac{2bd^2f(de-cf)\log(d(e+fx))}{\left(\left(c^2+1\right)f^2-2cdef+d^2e^2\right)^2}+\frac{ibd^2\log(-c-dx+i)}{2(de-(c-i)f)^2}-\frac{ibd^2\log(c+dx+i)}{2(de-(c+i)f)^2}}{2f}$$

Antiderivative was successfully verified.

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

```
[Out] ((b*d*f)/((d^2*e^2 - 2*c*d*e*f + (1 + c^2)*f^2)*(e + f*x)) - (a + b*ArcCot[
c + d*x])/(e + f*x)^2 + ((I/2)*b*d^2*Log[I - c - d*x])/(d*e - (-I + c)*f)^2
 - ((I/2)*b*d^2*Log[I + c + d*x])/(d*e - (I + c)*f)^2 - (2*b*d^2*f*(d*e - c
*f)*Log[d*(e + f*x)])/(d^2*e^2 - 2*c*d*e*f + (1 + c^2)*f^2)^2)/(2*f)
```

fricas [B] time = 3.21, size = 728, normalized size = 3.19

$$-\frac{ad^4e^4-(4\,ac+b)d^3e^3f+2\left(3\,ac^2+bc+a\right)d^2e^2f^2-\left(4\,ac^3+bc^2+4\,ac+b\right)def^3+\left(ac^4+2\,ac^2+a\right)f^4-\left(bd^3e\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/2*(a*d^4*e^4 - (4*a*c + b)*d^3*e^3*f + 2*(3*a*c^2 + b*c + a)*d^2*e^2*f^2
 - (4*a*c^3 + b*c^2 + 4*a*c + b)*d*e*f^3 + (a*c^4 + 2*a*c^2 + a)*f^4 - (b*d
^3*e^2*f^2 - 2*b*c*d^2*e*f^3 + (b*c^2 + b)*d*f^4)*x + (b*d^4*e^4 - 4*b*c*d^
3*e^3*f + 2*(3*b*c^2 + b)*d^2*e^2*f^2 - 4*(b*c^3 + b*c)*d*e*f^3 + (b*c^4 +
2*b*c^2 + b)*f^4)*arccot(d*x + c) + (b*d^4*e^4 - 2*b*c*d^3*e^3*f + (b*c^2 -
 b)*d^2*e^2*f^2 + (b*d^4*e^2*f^2 - 2*b*c*d^3*e*f^3 + (b*c^2 - b)*d^2*f^4)*x
^2 + 2*(b*d^4*e^3*f - 2*b*c*d^3*e^2*f^2 + (b*c^2 - b)*d^2*e*f^3)*x)*arctan(
d*x + c) - (b*d^3*e^3*f - b*c*d^2*e^2*f^2 + (b*d^3*e*f^3 - b*c*d^2*f^4)*x^2
 + 2*(b*d^3*e^2*f^2 - b*c*d^2*e*f^3)*x)*log(d^2*x^2 + 2*c*d*x + c^2 + 1) +
2*(b*d^3*e^3*f - b*c*d^2*e^2*f^2 + (b*d^3*e*f^3 - b*c*d^2*f^4)*x^2 + 2*(b*d
^3*e^2*f^2 - b*c*d^2*e*f^3)*x)*log(f*x + e))/(d^4*e^6*f - 4*c*d^3*e^5*f^2 +
 2*(3*c^2 + 1)*d^2*e^4*f^3 - 4*(c^3 + c)*d*e^3*f^4 + (c^4 + 2*c^2 + 1)*e^2*
f^5 + (d^4*e^4*f^3 - 4*c*d^3*e^3*f^4 + 2*(3*c^2 + 1)*d^2*e^2*f^5 - 4*(c^3 +
 c)*d*e*f^6 + (c^4 + 2*c^2 + 1)*f^7)*x^2 + 2*(d^4*e^5*f^2 - 4*c*d^3*e^4*f^3
 + 2*(3*c^2 + 1)*d^2*e^3*f^4 - 4*(c^3 + c)*d*e^2*f^5 + (c^4 + 2*c^2 + 1)*e*
f^6)*x)
```

giac [B] time = 4.70, size = 6190, normalized size = 27.15

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/2*(4*b*c^3*d*f^3*arctan(1/(d*x + c))*tan(1/2*arctan(1/(d*x + c)))^3 - 12*
b*c^2*d^2*f^2*arctan(1/(d*x + c))*e*tan(1/2*arctan(1/(d*x + c)))^3 + b*c^2*
d*f^3*arctan(1/(d*x + c))*tan(1/2*arctan(1/(d*x + c)))^4 - 2*b*c*d^2*f^2*ar
ctan(1/(d*x + c))*e*tan(1/2*arctan(1/(d*x + c)))^4 + 4*b*c^3*d*f^3*log(4*(4
*c^2*f^2*tan(1/2*arctan(1/(d*x + c)))^2 - 8*c*d*f*e*tan(1/2*arctan(1/(d*x +
 c)))^2 + 4*c*f^2*tan(1/2*arctan(1/(d*x + c)))^3 - 4*d*f*e*tan(1/2*arctan(1
/(d*x + c)))^3 + f^2*tan(1/2*arctan(1/(d*x + c)))^4 + 4*d^2*e^2*tan(1/2*arc
tan(1/(d*x + c)))^2 - 4*c*f^2*tan(1/2*arctan(1/(d*x + c))) + 4*d*f*e*tan(1/
2*arctan(1/(d*x + c))) - 2*f^2*tan(1/2*arctan(1/(d*x + c)))^2 + f^2)/(tan(1
/2*arctan(1/(d*x + c)))^4 + 2*tan(1/2*arctan(1/(d*x + c)))^2 + 1))*tan(1/2*
arctan(1/(d*x + c)))^2 - 12*b*c^2*d^2*f^2*e*log(4*(4*c^2*f^2*tan(1/2*arctan
(1/(d*x + c)))^2 - 8*c*d*f*e*tan(1/2*arctan(1/(d*x + c)))^2 + 4*c*f^2*tan(1
```

```
/2*arctan(1/(d*x + c)))^3 - 4*d*f*e*tan(1/2*arctan(1/(d*x + c)))^3 + f^2*ta
n(1/2*arctan(1/(d*x + c)))^4 + 4*d^2*e^2*tan(1/2*arctan(1/(d*x + c)))^2 - 4
*c*f^2*tan(1/2*arctan(1/(d*x + c))) + 4*d*f*e*tan(1/2*arctan(1/(d*x + c)))
- 2*f^2*tan(1/2*arctan(1/(d*x + c)))^2 + f^2)/(tan(1/2*arctan(1/(d*x + c)))
^4 + 2*tan(1/2*arctan(1/(d*x + c)))^2 + 1))*tan(1/2*arctan(1/(d*x + c)))^2
+ 4*a*c^3*d*f^3*tan(1/2*arctan(1/(d*x + c)))^3 + 12*b*c*d^3*f*arctan(1/(d*x
 + c))*e^2*tan(1/2*arctan(1/(d*x + c)))^3 - 12*a*c^2*d^2*f^2*e*tan(1/2*arct
an(1/(d*x + c)))^3 + 4*b*c^2*d*f^3*log(4*(4*c^2*f^2*tan(1/2*arctan(1/(d*x +
 c)))^2 - 8*c*d*f*e*tan(1/2*arctan(1/(d*x + c)))^2 + 4*c*f^2*tan(1/2*arctan
(1/(d*x + c)))^3 - 4*d*f*e*tan(1/2*arctan(1/(d*x + c)))^3 + f^2*tan(1/2*arc
tan(1/(d*x + c)))^4 + 4*d^2*e^2*tan(1/2*arctan(1/(d*x + c)))^2 - 4*c*f^2*ta
n(1/2*arctan(1/(d*x + c))) + 4*d*f*e*tan(1/2*arctan(1/(d*x + c))) - 2*f^2*t
an(1/2*arctan(1/(d*x + c)))^2 + f^2)/(tan(1/2*arctan(1/(d*x + c)))^4 + 2*ta
n(1/2*arctan(1/(d*x + c)))^2 + 1))*tan(1/2*arctan(1/(d*x + c)))^3 - 8*b*c*d
^2*f^2*e*log(4*(4*c^2*f^2*tan(1/2*arctan(1/(d*x + c)))^2 - 8*c*d*f*e*tan(1/
2*arctan(1/(d*x + c)))^2 + 4*c*f^2*tan(1/2*arctan(1/(d*x + c)))^3 - 4*d*f*e
*tan(1/2*arctan(1/(d*x + c)))^3 + f^2*tan(1/2*arctan(1/(d*x + c)))^4 + 4*d^
2*e^2*tan(1/2*arctan(1/(d*x + c)))^2 - 4*c*f^2*tan(1/2*arctan(1/(d*x + c)))
 + 4*d*f*e*tan(1/2*arctan(1/(d*x + c))) - 2*f^2*tan(1/2*arctan(1/(d*x + c))
)^2 + f^2)/(tan(1/2*arctan(1/(d*x + c)))^4 + 2*tan(1/2*arctan(1/(d*x + c)))
^2 + 1))*tan(1/2*arctan(1/(d*x + c)))^3 + a*c^2*d*f^3*tan(1/2*arctan(1/(d*x
 + c)))^4 + b*d^3*f*arctan(1/(d*x + c))*e^2*tan(1/2*arctan(1/(d*x + c)))^4
- 2*a*c*d^2*f^2*e*tan(1/2*arctan(1/(d*x + c)))^4 + b*c*d*f^3*log(4*(4*c^2*f
^2*tan(1/2*arctan(1/(d*x + c)))^2 - 8*c*d*f*e*tan(1/2*arctan(1/(d*x + c)))^
2 + 4*c*f^2*tan(1/2*arctan(1/(d*x + c)))^3 - 4*d*f*e*tan(1/2*arctan(1/(d*x
+ c)))^3 + f^2*tan(1/2*arctan(1/(d*x + c)))^4 + 4*d^2*e^2*tan(1/2*arctan(1/
(d*x + c)))^2 - 4*c*f^2*tan(1/2*arctan(1/(d*x + c))) + 4*d*f*e*tan(1/2*arct
an(1/(d*x + c))) - 2*f^2*tan(1/2*arctan(1/(d*x + c)))^2 + f^2)/(tan(1/2*arc
tan(1/(d*x + c)))^4 + 2*tan(1/2*arctan(1/(d*x + c)))^2 + 1))*tan(1/2*arctan
(1/(d*x + c)))^4 - b*d^2*f^2*e*log(4*(4*c^2*f^2*tan(1/2*arctan(1/(d*x + c))
)^2 - 8*c*d*f*e*tan(1/2*arctan(1/(d*x + c)))^2 + 4*c*f^2*tan(1/2*arctan(1/(
d*x + c)))^3 - 4*d*f*e*tan(1/2*arctan(1/(d*x + c)))^3 + f^2*tan(1/2*arctan(
1/(d*x + c)))^4 + 4*d^2*e^2*tan(1/2*arctan(1/(d*x + c)))^2 - 4*c*f^2*tan(1/
2*arctan(1/(d*x + c))) + 4*d*f*e*tan(1/2*arctan(1/(d*x + c))) - 2*f^2*tan(1
/2*arctan(1/(d*x + c)))^2 + f^2)/(tan(1/2*arctan(1/(d*x + c)))^4 + 2*tan(1/
2*arctan(1/(d*x + c)))^2 + 1))*tan(1/2*arctan(1/(d*x + c)))^4 - 4*b*c^3*d*f
^3*arctan(1/(d*x + c))*tan(1/2*arctan(1/(d*x + c))) + 12*b*c^2*d^2*f^2*arct
an(1/(d*x + c))*e*tan(1/2*arctan(1/(d*x + c))) - 14*b*c^2*d*f^3*arctan(1/(d
*x + c))*tan(1/2*arctan(1/(d*x + c)))^2 + 28*b*c*d^2*f^2*arctan(1/(d*x + c)
)*e*tan(1/2*arctan(1/(d*x + c)))^2 + 12*b*c*d^3*f*e^2*log(4*(4*c^2*f^2*tan(
1/2*arctan(1/(d*x + c)))^2 - 8*c*d*f*e*tan(1/2*arctan(1/(d*x + c)))^2 + 4*c
*f^2*tan(1/2*arctan(1/(d*x + c)))^3 - 4*d*f*e*tan(1/2*arctan(1/(d*x + c)))^
3 + f^2*tan(1/2*arctan(1/(d*x + c)))^4 + 4*d^2*e^2*tan(1/2*arctan(1/(d*x +
c)))^2 - 4*c*f^2*tan(1/2*arctan(1/(d*x + c))) + 4*d*f*e*tan(1/2*arctan(1/(d
*x + c))) - 2*f^2*tan(1/2*arctan(1/(d*x + c)))^2 + f^2)/(tan(1/2*arctan(1/(
d*x + c)))^4 + 2*tan(1/2*arctan(1/(d*x + c)))^2 + 1))*tan(1/2*arctan(1/(d*x
 + c)))^2 + 2*b*c^2*d*f^3*tan(1/2*arctan(1/(d*x + c)))^3 - 4*b*c*d*f^3*arct
an(1/(d*x + c))*tan(1/2*arctan(1/(d*x + c)))^3 - 4*b*d^4*arctan(1/(d*x + c)
)*e^3*tan(1/2*arctan(1/(d*x + c)))^3 + 12*a*c*d^3*f*e^2*tan(1/2*arctan(1/(d
*x + c)))^3 - 4*b*c*d^2*f^2*e*tan(1/2*arctan(1/(d*x + c)))^3 + 4*b*d^2*f^2*
arctan(1/(d*x + c))*e*tan(1/2*arctan(1/(d*x + c)))^3 + 4*b*d^3*f*e^2*log(4*
(4*c^2*f^2*tan(1/2*arctan(1/(d*x + c)))^2 - 8*c*d*f*e*tan(1/2*arctan(1/(d*x
 + c)))^2 + 4*c*f^2*tan(1/2*arctan(1/(d*x + c)))^3 - 4*d*f*e*tan(1/2*arctan
(1/(d*x + c)))^3 + f^2*tan(1/2*arctan(1/(d*x + c)))^4 + 4*d^2*e^2*tan(1/2*a
rctan(1/(d*x + c)))^2 - 4*c*f^2*tan(1/2*arctan(1/(d*x + c))) + 4*d*f*e*tan(
1/2*arctan(1/(d*x + c))) - 2*f^2*tan(1/2*arctan(1/(d*x + c)))^2 + f^2)/(tan
(1/2*arctan(1/(d*x + c)))^4 + 2*tan(1/2*arctan(1/(d*x + c)))^2 + 1))*tan(1/
2*arctan(1/(d*x + c)))^3 + b*c*d*f^3*tan(1/2*arctan(1/(d*x + c)))^4 - b*d*f
^3*arctan(1/(d*x + c))*tan(1/2*arctan(1/(d*x + c)))^4 + a*d^3*f*e^2*tan(1/2
```

*arctan(1/(d*x + c)))^4 - b*d^2*f^2*e*tan(1/2*arctan(1/(d*x + c)))^4 - 4*a*
c^3*d*f^3*tan(1/2*arctan(1/(d*x + c))) - 12*b*c*d^3*f*arctan(1/(d*x + c))*e
^2*tan(1/2*arctan(1/(d*x + c))) + 12*a*c^2*d^2*f^2*e*tan(1/2*arctan(1/(d*x
+ c))) - 4*b*c^2*d*f^3*log(4*(4*c^2*f^2*tan(1/2*arctan(1/(d*x + c)))^2 - 8*
c*d*f*e*tan(1/2*arctan(1/(d*x + c)))^2 + 4*c*f^2*tan(1/2*arctan(1/(d*x + c)
))^3 - 4*d*f*e*tan(1/2*arctan(1/(d*x + c)))^3 + f^2*tan(1/2*arctan(1/(d*x +
c)))^4 + 4*d^2*e^2*tan(1/2*arctan(1/(d*x + c)))^2 - 4*c*f^2*tan(1/2*arctan
(1/(d*x + c))) + 4*d*f*e*tan(1/2*arctan(1/(d*x + c))) - 2*f^2*tan(1/2*arcta
n(1/(d*x + c)))^2 + f^2)/(tan(1/2*arctan(1/(d*x + c)))^4 + 2*tan(1/2*arctan
(1/(d*x + c)))^2 + 1))*tan(1/2*arctan(1/(d*x + c))) + 8*b*c*d^2*f^2*e*log(4
*(4*c^2*f^2*tan(1/2*arctan(1/(d*x + c)))^2 - 8*c*d*f*e*tan(1/2*arctan(1/(d*
x + c)))^2 + 4*c*f^2*tan(1/2*arctan(1/(d*x + c)))^3 - 4*d*f*e*tan(1/2*arcta
n(1/(d*x + c)))^3 + f^2*tan(1/2*arctan(1/(d*x + c)))^4 + 4*d^2*e^2*tan(1/2*
arctan(1/(d*x + c)))^2 - 4*c*f^2*tan(1/2*arctan(1/(d*x + c))) + 4*d*f*e*tan
(1/2*arctan(1/(d*x + c))) - 2*f^2*tan(1/2*arctan(1/(d*x + c)))^2 + f^2)/(ta
n(1/2*arctan(1/(d*x + c)))^4 + 2*tan(1/2*arctan(1/(d*x + c)))^2 + 1))*tan(1
/2*arctan(1/(d*x + c))) - 14*a*c^2*d*f^3*tan(1/2*arctan(1/(d*x + c)))^2 - 1
4*b*d^3*f*arctan(1/(d*x + c))*e^2*tan(1/2*arctan(1/(d*x + c)))^2 + 28*a*c*d
^2*f^2*e*tan(1/2*arctan(1/(d*x + c)))^2 - 2*b*c*d*f^3*log(4*(4*c^2*f^2*tan(
1/2*arctan(1/(d*x + c)))^2 - 8*c*d*f*e*tan(1/2*arctan(1/(d*x + c)))^2 + 4*c
*f^2*tan(1/2*arctan(1/(d*x + c)))^3 - 4*d*f*e*tan(1/2*arctan(1/(d*x + c)))^
3 + f^2*tan(1/2*arctan(1/(d*x + c)))^4 + 4*d^2*e^2*tan(1/2*arctan(1/(d*x +
c)))^2 - 4*c*f^2*tan(1/2*arctan(1/(d*x + c))) + 4*d*f*e*tan(1/2*arctan(1/(d
*x + c))) - 2*f^2*tan(1/2*arctan(1/(d*x + c)))^2 + f^2)/(tan(1/2*arctan(1/(
d*x + c)))^4 + 2*tan(1/2*arctan(1/(d*x + c)))^2 + 1))*tan(1/2*arctan(1/(d*x
+ c)))^2 - 4*b*d^4*e^3*log(4*(4*c^2*f^2*tan(1/2*arctan(1/(d*x + c)))^2 - 8
*c*d*f*e*tan(1/2*arctan(1/(d*x + c)))^2 + 4*c*f^2*tan(1/2*arctan(1/(d*x + c
)))^3 - 4*d*f*e*tan(1/2*arctan(1/(d*x + c)))^3 + f^2*tan(1/2*arctan(1/(d*x
+ c)))^4 + 4*d^2*e^2*tan(1/2*arctan(1/(d*x + c)))^2 - 4*c*f^2*tan(1/2*arcta
n(1/(d*x + c))) + 4*d*f*e*tan(1/2*arctan(1/(d*x + c))) - 2*f^2*tan(1/2*arct
an(1/(d*x + c)))^2 + f^2)/(tan(1/2*arctan(1/(d*x + c)))^4 + 2*tan(1/2*arcta
n(1/(d*x + c)))^2 + 1))*tan(1/2*arctan(1/(d*x + c)))^2 + 2*b*d^2*f^2*e*log(
4*(4*c^2*f^2*tan(1/2*arctan(1/(d*x + c)))^2 - 8*c*d*f*e*tan(1/2*arctan(1/(d
*x + c)))^2 + 4*c*f^2*tan(1/2*arctan(1/(d*x + c)))^3 - 4*d*f*e*tan(1/2*arct
an(1/(d*x + c)))^3 + f^2*tan(1/2*arctan(1/(d*x + c)))^4 + 4*d^2*e^2*tan(1/2
*arctan(1/(d*x + c)))^2 - 4*c*f^2*tan(1/2*arctan(1/(d*x + c))) + 4*d*f*e*ta
n(1/2*arctan(1/(d*x + c))) - 2*f^2*tan(1/2*arctan(1/(d*x + c)))^2 + f^2)/(t
an(1/2*arctan(1/(d*x + c)))^4 + 2*tan(1/2*arctan(1/(d*x + c)))^2 + 1))*tan(
1/2*arctan(1/(d*x + c)))^2 - 4*a*c*d*f^3*tan(1/2*arctan(1/(d*x + c)))^3 - 4
*a*d^4*e^3*tan(1/2*arctan(1/(d*x + c)))^3 + 2*b*d^3*f*e^2*tan(1/2*arctan(1/
(d*x + c)))^3 + 4*a*d^2*f^2*e*tan(1/2*arctan(1/(d*x + c)))^3 - a*d*f^3*tan(
1/2*arctan(1/(d*x + c)))^4 + b*c^2*d*f^3*arctan(1/(d*x + c)) - 2*b*c*d^2*f^
2*arctan(1/(d*x + c))*e - 2*b*c^2*d*f^3*tan(1/2*arctan(1/(d*x + c))) + 4*b*
c*d*f^3*arctan(1/(d*x + c))*tan(1/2*arctan(1/(d*x + c))) + 4*b*d^4*arctan(1
/(d*x + c))*e^3*tan(1/2*arctan(1/(d*x + c))) - 12*a*c*d^3*f*e^2*tan(1/2*arc
tan(1/(d*x + c))) + 4*b*c*d^2*f^2*e*tan(1/2*arctan(1/(d*x + c))) - 4*b*d^2*
f^2*arctan(1/(d*x + c))*e*tan(1/2*arctan(1/(d*x + c))) - 4*b*d^3*f*e^2*log(
4*(4*c^2*f^2*tan(1/2*arctan(1/(d*x + c)))^2 - 8*c*d*f*e*tan(1/2*arctan(1/(d
*x + c)))^2 + 4*c*f^2*tan(1/2*arctan(1/(d*x + c)))^3 - 4*d*f*e*tan(1/2*arct
an(1/(d*x + c)))^3 + f^2*tan(1/2*arctan(1/(d*x + c)))^4 + 4*d^2*e^2*tan(1/2
*arctan(1/(d*x + c)))^2 - 4*c*f^2*tan(1/2*arctan(1/(d*x + c))) + 4*d*f*e*ta
n(1/2*arctan(1/(d*x + c))) - 2*f^2*tan(1/2*arctan(1/(d*x + c)))^2 + f^2)/(t
an(1/2*arctan(1/(d*x + c)))^4 + 2*tan(1/2*arctan(1/(d*x + c)))^2 + 1))*tan(
1/2*arctan(1/(d*x + c))) - 6*b*c*d*f^3*tan(1/2*arctan(1/(d*x + c)))^2 - 2*b
*d*f^3*arctan(1/(d*x + c))*tan(1/2*arctan(1/(d*x + c)))^2 - 14*a*d^3*f*e^2*
tan(1/2*arctan(1/(d*x + c)))^2 + 6*b*d^2*f^2*e*tan(1/2*arctan(1/(d*x + c)))
^2 - 2*b*d*f^3*tan(1/2*arctan(1/(d*x + c)))^3 + a*c^2*d*f^3 + b*d^3*f*arcta
n(1/(d*x + c))*e^2 - 2*a*c*d^2*f^2*e + b*c*d*f^3*log(4*(4*c^2*f^2*tan(1/2*a
rctan(1/(d*x + c)))^2 - 8*c*d*f*e*tan(1/2*arctan(1/(d*x + c)))^2 + 4*c*f^2*

```
tan(1/2*arctan(1/(d*x + c)))^3 - 4*d*f*e*tan(1/2*arctan(1/(d*x + c)))^3 + f
^2*tan(1/2*arctan(1/(d*x + c)))^4 + 4*d^2*e^2*tan(1/2*arctan(1/(d*x + c)))^
2 - 4*c*f^2*tan(1/2*arctan(1/(d*x + c))) + 4*d*f*e*tan(1/2*arctan(1/(d*x +
c))) - 2*f^2*tan(1/2*arctan(1/(d*x + c)))^2 + f^2)/(tan(1/2*arctan(1/(d*x +
 c)))^4 + 2*tan(1/2*arctan(1/(d*x + c)))^2 + 1)) - b*d^2*f^2*e*log(4*(4*c^2
*f^2*tan(1/2*arctan(1/(d*x + c)))^2 - 8*c*d*f*e*tan(1/2*arctan(1/(d*x + c))
)^2 + 4*c*f^2*tan(1/2*arctan(1/(d*x + c)))^3 - 4*d*f*e*tan(1/2*arctan(1/(d*
x + c)))^3 + f^2*tan(1/2*arctan(1/(d*x + c)))^4 + 4*d^2*e^2*tan(1/2*arctan(
1/(d*x + c)))^2 - 4*c*f^2*tan(1/2*arctan(1/(d*x + c))) + 4*d*f*e*tan(1/2*ar
ctan(1/(d*x + c))) - 2*f^2*tan(1/2*arctan(1/(d*x + c)))^2 + f^2)/(tan(1/2*a
rctan(1/(d*x + c)))^4 + 2*tan(1/2*arctan(1/(d*x + c)))^2 + 1)) + 4*a*c*d*f^
3*tan(1/2*arctan(1/(d*x + c))) + 4*a*d^4*e^3*tan(1/2*arctan(1/(d*x + c))) -
 2*b*d^3*f*e^2*tan(1/2*arctan(1/(d*x + c))) - 4*a*d^2*f^2*e*tan(1/2*arctan(
1/(d*x + c))) - 2*a*d*f^3*tan(1/2*arctan(1/(d*x + c)))^2 + b*c*d*f^3 - b*d*
f^3*arctan(1/(d*x + c)) + a*d^3*f*e^2 - b*d^2*f^2*e + 2*b*d*f^3*tan(1/2*arc
tan(1/(d*x + c))) - a*d*f^3)*d/(4*c^6*f^6*tan(1/2*arctan(1/(d*x + c)))^2 -
24*c^5*d*f^5*e*tan(1/2*arctan(1/(d*x + c)))^2 + 4*c^5*f^6*tan(1/2*arctan(1/
(d*x + c)))^3 - 20*c^4*d*f^5*e*tan(1/2*arctan(1/(d*x + c)))^3 + c^4*f^6*tan
(1/2*arctan(1/(d*x + c)))^4 - 4*c^3*d*f^5*e*tan(1/2*arctan(1/(d*x + c)))^4
+ 60*c^4*d^2*f^4*e^2*tan(1/2*arctan(1/(d*x + c)))^2 + 40*c^3*d^2*f^4*e^2*ta
n(1/2*arctan(1/(d*x + c)))^3 + 6*c^2*d^2*f^4*e^2*tan(1/2*arctan(1/(d*x + c)
))^4 - 4*c^5*f^6*tan(1/2*arctan(1/(d*x + c))) + 20*c^4*d*f^5*e*tan(1/2*arct
an(1/(d*x + c))) + 6*c^4*f^6*tan(1/2*arctan(1/(d*x + c)))^2 - 80*c^3*d^3*f^
3*e^3*tan(1/2*arctan(1/(d*x + c)))^2 - 24*c^3*d*f^5*e*tan(1/2*arctan(1/(d*x
 + c)))^2 + 8*c^3*f^6*tan(1/2*arctan(1/(d*x + c)))^3 - 40*c^2*d^3*f^3*e^3*t
an(1/2*arctan(1/(d*x + c)))^3 - 24*c^2*d*f^5*e*tan(1/2*arctan(1/(d*x + c)))
^3 + 2*c^2*f^6*tan(1/2*arctan(1/(d*x + c)))^4 - 4*c*d^3*f^3*e^3*tan(1/2*arc
tan(1/(d*x + c)))^4 - 4*c*d*f^5*e*tan(1/2*arctan(1/(d*x + c)))^4 - 40*c^3*d
^2*f^4*e^2*tan(1/2*arctan(1/(d*x + c))) + 60*c^2*d^4*f^2*e^4*tan(1/2*arctan
(1/(d*x + c)))^2 + 36*c^2*d^2*f^4*e^2*tan(1/2*arctan(1/(d*x + c)))^2 + 20*c
*d^4*f^2*e^4*tan(1/2*arctan(1/(d*x + c)))^3 + 24*c*d^2*f^4*e^2*tan(1/2*arct
an(1/(d*x + c)))^3 + d^4*f^2*e^4*tan(1/2*arctan(1/(d*x + c)))^4 + 2*d^2*f^4
*e^2*tan(1/2*arctan(1/(d*x + c)))^4 + c^4*f^6 - 4*c^3*d*f^5*e - 8*c^3*f^6*t
an(1/2*arctan(1/(d*x + c))) + 40*c^2*d^3*f^3*e^3*tan(1/2*arctan(1/(d*x + c)
)) + 24*c^2*d*f^5*e*tan(1/2*arctan(1/(d*x + c))) - 24*c*d^5*f*e^5*tan(1/2*a
rctan(1/(d*x + c)))^2 - 24*c*d^3*f^3*e^3*tan(1/2*arctan(1/(d*x + c)))^2 + 4
*c*f^6*tan(1/2*arctan(1/(d*x + c)))^3 - 4*d^5*f*e^5*tan(1/2*arctan(1/(d*x +
 c)))^3 - 8*d^3*f^3*e^3*tan(1/2*arctan(1/(d*x + c)))^3 - 4*d*f^5*e*tan(1/2*
arctan(1/(d*x + c)))^3 + f^6*tan(1/2*arctan(1/(d*x + c)))^4 + 6*c^2*d^2*f^4
*e^2 - 20*c*d^4*f^2*e^4*tan(1/2*arctan(1/(d*x + c))) - 24*c*d^2*f^4*e^2*tan
(1/2*arctan(1/(d*x + c))) + 4*d^6*e^6*tan(1/2*arctan(1/(d*x + c)))^2 + 6*d^
4*f^2*e^4*tan(1/2*arctan(1/(d*x + c)))^2 + 2*c^2*f^6 - 4*c*d^3*f^3*e^3 - 4*
c*d*f^5*e - 4*c*f^6*tan(1/2*arctan(1/(d*x + c))) + 4*d^5*f*e^5*tan(1/2*arct
an(1/(d*x + c))) + 8*d^3*f^3*e^3*tan(1/2*arctan(1/(d*x + c))) + 4*d*f^5*e*t
an(1/2*arctan(1/(d*x + c))) - 2*f^6*tan(1/2*arctan(1/(d*x + c)))^2 + d^4*f^
2*e^4 + 2*d^2*f^4*e^2 + f^6)
```

maple [A] time = 0.05, size = 437, normalized size = 1.92

$$-\frac{d^2 a}{2\left(dfx+de\right)^2 f}-\frac{d^2 b \operatorname{arccot}\left(dx+c\right)}{2\left(dfx+de\right)^2 f}+\frac{d^2 b}{2\left(c^2f^2-2cdef+d^2e^2+f^2\right)\left(dfx+de\right)}+\frac{d^2 bf\ln\left(f\left(dx+c\right)-cf+d\cdots\right.}{\left(c^2f^2-2cdef+d^2e^2+f^2\cdots\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -1/2*d^2*a/(d*f*x+d*e)^2/f-1/2*d^2*b/(d*f*x+d*e)^2/f*arccot(d*x+c)+1/2*d^2*
b/(c^2*f^2-2*c*d*e*f+d^2*e^2+f^2)/(d*f*x+d*e)+d^2*b*f/(c^2*f^2-2*c*d*e*f+d^
2*e^2+f^2)^2*ln(f*(d*x+c)-c*f+d*e)*c-d^3*b/(c^2*f^2-2*c*d*e*f+d^2*e^2+f^2)^
2*ln(f*(d*x+c)-c*f+d*e)*e-1/2*d^2*b*f/(c^2*f^2-2*c*d*e*f+d^2*e^2+f^2)^2*arc
```

```
tan(d*x+c)*c^2+d^3*b/(c^2*f^2-2*c*d*e*f+d^2*e^2+f^2)^2*arctan(d*x+c)*c*e-1/
2*d^4*b/f/(c^2*f^2-2*c*d*e*f+d^2*e^2+f^2)^2*arctan(d*x+c)*e^2-1/2*d^2*b*f/(
c^2*f^2-2*c*d*e*f+d^2*e^2+f^2)^2*ln(1+(d*x+c)^2)*c+1/2*d^3*b/(c^2*f^2-2*c*d
*e*f+d^2*e^2+f^2)^2*ln(1+(d*x+c)^2)*e+1/2*d^2*b*f/(c^2*f^2-2*c*d*e*f+d^2*e^
2+f^2)^2*arctan(d*x+c)
```

maxima [A] time = 0.45, size = 410, normalized size = 1.80

$$\frac{1}{2}\left(d\left(\frac{\left(d^2e-cdf\right)\log\left(d^2x^2+2\,cdx+c^2+1\right)}{d^4e^4-4\,cd^3e^3f+2\left(3\,c^2+1\right)d^2e^2f^2-4\left(c^3+c\right)def^3+\left(c^4+2\,c^2+1\right)f^4}-\frac{2\left(d^2e-\right.}{d^4e^4-4\,cd^3e^3f+2\left(3\,c^2+1\right)d^2\right.}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/2*(d*((d^2*e - c*d*f)*log(d^2*x^2 + 2*c*d*x + c^2 + 1)/(d^4*e^4 - 4*c*d^3
*e^3*f + 2*(3*c^2 + 1)*d^2*e^2*f^2 - 4*(c^3 + c)*d*e*f^3 + (c^4 + 2*c^2 + 1
)*f^4) - 2*(d^2*e - c*d*f)*log(f*x + e)/(d^4*e^4 - 4*c*d^3*e^3*f + 2*(3*c^2
 + 1)*d^2*e^2*f^2 - 4*(c^3 + c)*d*e*f^3 + (c^4 + 2*c^2 + 1)*f^4) - (d^4*e^2
 - 2*c*d^3*e*f + (c^2 - 1)*d^2*f^2)*arctan((d^2*x + c*d)/d)/((d^4*e^4*f - 4
*c*d^3*e^3*f^2 + 2*(3*c^2 + 1)*d^2*e^2*f^3 - 4*(c^3 + c)*d*e*f^4 + (c^4 + 2
*c^2 + 1)*f^5)*d) + 1/(d^2*e^3 - 2*c*d*e^2*f + (c^2 + 1)*e*f^2 + (d^2*e^2*f
 - 2*c*d*e*f^2 + (c^2 + 1)*f^3)*x)) - arccot(d*x + c)/(f^3*x^2 + 2*e*f^2*x
+ e^2*f))*b - 1/2*a/(f^3*x^2 + 2*e*f^2*x + e^2*f)
```

mupad [B] time = 7.33, size = 399, normalized size = 1.75

$$\frac{b\,d\,e}{2\left(e+f\,x\right)^2\,\left(c^2\,f^2-2\,c\,d\,e\,f+d^2\,e^2+f^2\right)}-\frac{a\,f}{2\left(e+f\,x\right)^2\,\left(c^2\,f^2-2\,c\,d\,e\,f+d^2\,e^2+f^2\right)}-\frac{b\,\mathrm{acot}\left(c+d\,x\right)}{2\,f\left(e+f\,x\right)^2}-\frac{}{2\left(e+f\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] (b*d*e)/(2*(e + f*x)^2*(f^2 + c^2*f^2 + d^2*e^2 - 2*c*d*e*f)) - (a*f)/(2*(e
 + f*x)^2*(f^2 + c^2*f^2 + d^2*e^2 - 2*c*d*e*f)) - (b*acot(c + d*x))/(2*f*(
e + f*x)^2) + (b*d^2*log(c + d*x - 1i)*1i)/(4*f*(f*1i - c*f + d*e)^2) - (b*
d^2*log(c + d*x + 1i)*1i)/(4*f*(f*1i + c*f - d*e)^2) - (a*c^2*f)/(2*(e + f*
x)^2*(f^2 + c^2*f^2 + d^2*e^2 - 2*c*d*e*f)) - (b*d^3*e*log(e + f*x))/(f^2 +
 c^2*f^2 + d^2*e^2 - 2*c*d*e*f)^2 + (b*c*d^2*f*log(e + f*x))/(f^2 + c^2*f^2
 + d^2*e^2 - 2*c*d*e*f)^2 + (a*c*d*e)/((e + f*x)^2*(f^2 + c^2*f^2 + d^2*e^2
 - 2*c*d*e*f)) + (b*d*f*x)/(2*(e + f*x)^2*(f^2 + c^2*f^2 + d^2*e^2 - 2*c*d*
e*f)) - (a*d^2*e^2)/(2*f*(e + f*x)^2*(f^2 + c^2*f^2 + d^2*e^2 - 2*c*d*e*f))
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Timed out
```

3.136 $\int (e+fx)^2 \left(a+b\cot^{-1}(c+dx)\right)^2 \, dx$

Optimal. Leaf size=382

$$\frac{i\left(-\left(1-3c^2\right)f^2-6cdef+3d^2e^2\right)\left(a+b\cot^{-1}(c+dx)\right)^2}{3d^3}-\frac{(de-cf)\left(-\left(3-c^2\right)f^2-2cdef+d^2e^2\right)\left(a+b\cot^{-1}\right.}{3d^3f}$$

```
[Out] 1/3*b^2*f^2*x/d^2+2*a*b*f*(-c*f+d*e)*x/d^2+2*b^2*f*(-c*f+d*e)*(d*x+c)*arcco
t(d*x+c)/d^3+1/3*b*f^2*(d*x+c)^2*(a+b*arccot(d*x+c))/d^3+1/3*I*(3*d^2*e^2-6
*c*d*e*f-(-3*c^2+1)*f^2)*(a+b*arccot(d*x+c))^2/d^3-1/3*(-c*f+d*e)*(d^2*e^2-
2*c*d*e*f-(-c^2+3)*f^2)*(a+b*arccot(d*x+c))^2/d^3/f+1/3*(f*x+e)^3*(a+b*arcc
ot(d*x+c))^2/f-1/3*b^2*f^2*arctan(d*x+c)/d^3-2/3*b*(3*d^2*e^2-6*c*d*e*f-(-3
*c^2+1)*f^2)*(a+b*arccot(d*x+c))*ln(2/(1+I*(d*x+c)))/d^3+b^2*f*(-c*f+d*e)*l
n(1+(d*x+c)^2)/d^3+1/3*I*b^2*(3*d^2*e^2-6*c*d*e*f-(-3*c^2+1)*f^2)*polylog(2
,1-2/(1+I*(d*x+c)))/d^3
```

Rubi [A] time = 0.58, antiderivative size = 382, normalized size of antiderivative = 1.00, number of steps used = 16, number of rules used = 13, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.650, Rules used = {5048, 4865, 4847, 260, 4853, 321, 203, 4985, 4885, 4921, 4855, 2402, 2315}

$$\frac{ib^2\left(-\left(1-3c^2\right)f^2-6cdef+3d^2e^2\right)\text{PolyLog}\left(2,1-\frac{2}{1+i(c+dx)}\right)}{3d^3}+\frac{i\left(-\left(1-3c^2\right)f^2-6cdef+3d^2e^2\right)\left(a+b\cot^{-1}\right.}{3d^3}$$

Antiderivative was successfully verified.

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

```
[Out] (b^2*f^2*x)/(3*d^2) + (2*a*b*f*(d*e - c*f)*x)/d^2 + (2*b^2*f*(d*e - c*f)*(c
 + d*x)*ArcCot[c + d*x])/d^3 + (b*f^2*(c + d*x)^2*(a + b*ArcCot[c + d*x]))/
(3*d^3) + ((I/3)*(3*d^2*e^2 - 6*c*d*e*f - (1 - 3*c^2)*f^2)*(a + b*ArcCot[c
+ d*x])^2)/d^3 - ((d*e - c*f)*(d^2*e^2 - 2*c*d*e*f - (3 - c^2)*f^2)*(a + b*
ArcCot[c + d*x])^2)/(3*d^3*f) + ((e + f*x)^3*(a + b*ArcCot[c + d*x])^2)/(3*
f) - (b^2*f^2*ArcTan[c + d*x])/(3*d^3) - (2*b*(3*d^2*e^2 - 6*c*d*e*f - (1 -
 3*c^2)*f^2)*(a + b*ArcCot[c + d*x])*Log[2/(1 + I*(c + d*x))])/(3*d^3) + (b
^2*f*(d*e - c*f)*Log[1 + (c + d*x)^2])/d^3 + ((I/3)*b^2*(3*d^2*e^2 - 6*c*d*
e*f - (1 - 3*c^2)*f^2)*PolyLog[2, 1 - 2/(1 + I*(c + d*x))])/d^3
```

Rule 203

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

Rule 260

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

Rule 321

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

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2402

```
Int[Log[(c_.)/((d_) + (e_.)*(x_))]/((f_) + (g_.)*(x_)^2), x_Symbol] :> -Dis
t[e/g, Subst[Int[Log[2*d*x]/(1 - 2*d*x), x], x, 1/(d + e*x)], x] /; FreeQ[{
c, d, e, f, g}, x] && EqQ[c, 2*d] && EqQ[e^2*f + d^2*g, 0]
```

Rule 4847

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b*Ar
cCot[c*x])^p, x] + Dist[b*c*p, Int[(x*(a + b*ArcCot[c*x])^(p - 1))/(1 + c^2
*x^2), x], x] /; FreeQ[{a, b, c}, x] && IGtQ[p, 0]
```

Rule 4853

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcCot[c*x])^p)/(d*(m + 1)), x] + Dist[(b*c*p
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcCot[c*x])^(p - 1))/(1 + c^2*x^2
), x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[p, 0] && (EqQ[p, 1] || Integ
erQ[m]) && NeQ[m, -1]
```

Rule 4855

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symbol]
 :> -Simp[((a + b*ArcCot[c*x])^p*Log[2/(1 + (e*x)/d)])/e, x] - Dist[(b*c*p)
/e, Int[((a + b*ArcCot[c*x])^(p - 1)*Log[2/(1 + (e*x)/d)])/(1 + c^2*x^2), x
], x] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[p, 0] && EqQ[c^2*d^2 + e^2, 0]
```

Rule 4865

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_)*((d_) + (e_.)*(x_))^(q_.), x_Sy
mbol] :> Simp[((d + e*x)^(q + 1)*(a + b*ArcCot[c*x])^p)/(e*(q + 1)), x] + D
ist[(b*c*p)/(e*(q + 1)), Int[ExpandIntegrand[(a + b*ArcCot[c*x])^(p - 1), (
d + e*x)^(q + 1)/(1 + c^2*x^2), x], x], x] /; FreeQ[{a, b, c, d, e}, x] &&
IGtQ[p, 1] && IntegerQ[q] && NeQ[q, -1]
```

Rule 4885

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)^2), x_Symbo
l] :> -Simp[(a + b*ArcCot[c*x])^(p + 1)/(b*c*d*(p + 1)), x] /; FreeQ[{a, b,
 c, d, e, p}, x] && EqQ[e, c^2*d] && NeQ[p, -1]
```

Rule 4921

```
Int[(((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)*(x_))/((d_) + (e_.)*(x_)^2),
x_Symbol] :> Simp[(I*(a + b*ArcCot[c*x])^(p + 1))/(b*e*(p + 1)), x] - Dist[
1/(c*d), Int[(a + b*ArcCot[c*x])^p/(I - c*x), x], x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[e, c^2*d] && IGtQ[p, 0]
```

Rule 4985

```
Int[(((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)*((f_) + (g_.)*(x_))^(m_.))/((
d_) + (e_.)*(x_)^2), x_Symbol] :> Int[ExpandIntegrand[(a + b*ArcCot[c*x])^p
/(d + e*x^2), (f + g*x)^m, x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && IGt
Q[p, 0] && EqQ[e, c^2*d] && IGtQ[m, 0]
```

Rule 5048

```
Int[((a_.) + ArcCot[(c_) + (d_.)*(x_)]*(b_.))^(p_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cCot[x])^p, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, p}, x] && IG
tQ[p, 0]
```

Rubi steps

$$\int (e+fx)^2 \left(a+b\cot^{-1}(c+dx)\right)^2 dx = \frac{\text{Subst}\left(\int \left(\frac{de-cf}{d}+\frac{fx}{d}\right)^2 \left(a+b\cot^{-1}(x)\right)^2 dx, x, c+dx\right)}{d}$$

$$= \frac{(e+fx)^3 \left(a+b\cot^{-1}(c+dx)\right)^2}{3f} + \frac{(2b)\,\text{Subst}\left(\int \left(\frac{3f^2(de-cf)\left(a+b\cot^{-1}(x)\right)}{d^3}\right.\right.}{}$$

$$= \frac{(e+fx)^3 \left(a+b\cot^{-1}(c+dx)\right)^2}{3f} + \frac{(2b)\,\text{Subst}\left(\int \frac{\left((de-cf)\left(d^2e^2-2cdef-3f^2\right.\right.}{}\right.}{}$$

$$= \frac{2abf(de-cf)x}{d^2} + \frac{bf^2(c+dx)^2\left(a+b\cot^{-1}(c+dx)\right)}{3d^3} + \frac{(e+fx)^3\left(a+\right.}{}$$

$$= \frac{b^2f^2x}{3d^2} + \frac{2abf(de-cf)x}{d^2} + \frac{2b^2f(de-cf)(c+dx)\cot^{-1}(c+dx)}{d^3} + \frac{bf^2}{}$$

$$= \frac{b^2f^2x}{3d^2} + \frac{2abf(de-cf)x}{d^2} + \frac{2b^2f(de-cf)(c+dx)\cot^{-1}(c+dx)}{d^3} + \frac{bf^2}{}$$

$$= \frac{b^2f^2x}{3d^2} + \frac{2abf(de-cf)x}{d^2} + \frac{2b^2f(de-cf)(c+dx)\cot^{-1}(c+dx)}{d^3} + \frac{bf^2}{}$$

$$= \frac{b^2f^2x}{3d^2} + \frac{2abf(de-cf)x}{d^2} + \frac{2b^2f(de-cf)(c+dx)\cot^{-1}(c+dx)}{d^3} + \frac{bf^2}{}$$

$$= \frac{b^2f^2x}{3d^2} + \frac{2abf(de-cf)x}{d^2} + \frac{2b^2f(de-cf)(c+dx)\cot^{-1}(c+dx)}{d^3} + \frac{bf^2}{}$$

Mathematica [A] time = 5.37, size = 665, normalized size = 1.74

$$a^2e^2x+a^2efx^2+\frac{1}{3}a^2f^2x^3+\frac{ab\left(\left(\left(3c^2-1\right)f^2-6cdef+3d^2e^2\right)\log\left(c^2+2cdx+d^2x^2+1\right)-2\left(c^3f^2-3c^2def+\right.\right.}{}$$

Warning: Unable to verify antiderivative.

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

```
[Out] a^2*e^2*x + a^2*e*f*x^2 + (a^2*f^2*x^3)/3 + (a*b*(d*f*x*(6*d*e - 4*c*f + d*
f*x) + 2*d^3*x*(3*e^2 + 3*e*f*x + f^2*x^2)*ArcCot[c + d*x] - 2*(3*c*d^2*e^2
 + 3*d*e*f - 3*c^2*d*e*f - 3*c*f^2 + c^3*f^2)*ArcTan[c + d*x] + (3*d^2*e^2
- 6*c*d*e*f + (-1 + 3*c^2)*f^2)*Log[1 + c^2 + 2*c*d*x + d^2*x^2]))/(3*d^3)
+ (b^2*e^2*(ArcCot[c + d*x]*((I + c + d*x)*ArcCot[c + d*x] - 2*Log[1 - E^((
2*I)*ArcCot[c + d*x])]) + I*PolyLog[2, E^((2*I)*ArcCot[c + d*x])]))/d + (b^
2*e*f*((1 - (2*I)*c - c^2 + d^2*x^2)*ArcCot[c + d*x]^2 + 2*ArcCot[c + d*x]*
```

```
(c + d*x + 2*c*Log[1 - E^((2*I)*ArcCot[c + d*x])]) - 2*Log[1/((c + d*x)*Sqr
t[1 + (c + d*x)^(-2)])] - (2*I)*c*PolyLog[2, E^((2*I)*ArcCot[c + d*x])]))/d
^2 + (b^2*f^2*((c + d*x)*(1 + (c + d*x)^2)*(1 - 6*c*ArcCot[c + d*x] + 3*(1
+ c^2)*ArcCot[c + d*x]^2) - (c + d*x)*Sqrt[1 + (c + d*x)^(-2)]*(1 + (c + d*
x)^2)*(1 - 6*c*ArcCot[c + d*x] + (-1 + 3*c^2)*ArcCot[c + d*x]^2)*Cos[3*ArcC
ot[c + d*x]] + 2*(1 + (c + d*x)^2)*((-I)*ArcCot[c + d*x]^2*(1 - (6*I)*c - 3
*c^2 + (-1 + 3*c^2)*Cos[2*ArcCot[c + d*x]]) + 2*ArcCot[c + d*x]*(1 + (1 - 3
*c^2)*Log[1 - E^((2*I)*ArcCot[c + d*x])] + (-1 + 3*c^2)*Cos[2*ArcCot[c + d*
x]]*Log[1 - E^((2*I)*ArcCot[c + d*x])]) - 6*c*(-1 + Cos[2*ArcCot[c + d*x]])
*Log[1/((c + d*x)*Sqrt[1 + (c + d*x)^(-2)])]) + (4*I)*(-1 + 3*c^2)*PolyLog[
2, E^((2*I)*ArcCot[c + d*x])]))/(12*d^3)
```

fricas [F] time = 0.62, size = 0, normalized size = 0.00

$$\text{integral}\left(a^2f^2x^2 + 2\,a^2efx + a^2e^2 + \left(b^2f^2x^2 + 2\,b^2efx + b^2e^2\right)\text{arccot}\left(dx+c\right)^2 + 2\left(abf^2x^2 + 2\,abefx + abe^2\right)\text{ar}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integral(a^2*f^2*x^2 + 2*a^2*e*f*x + a^2*e^2 + (b^2*f^2*x^2 + 2*b^2*e*f*x +
 b^2*e^2)*arccot(d*x + c)^2 + 2*(a*b*f^2*x^2 + 2*a*b*e*f*x + a*b*e^2)*arcco
t(d*x + c), x)
```

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

$$\int \left(fx+e\right)^2 \left(b\,\text{arccot}\left(dx+c\right)+a\right)^2 dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate((f*x + e)^2*(b*arccot(d*x + c) + a)^2, x)
```

maple [B] time = 0.20, size = 1832, normalized size = 4.80

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] a^2*x*e^2-1/3/d^3*a*b*f^2*ln(1+(d*x+c)^2)-5/3/d^3*a*b*f^2*c^2+2/3*a*b/f*arc
cot(d*x+c)*e^3+2*arccot(d*x+c)*x*a*b*e^2+2/3*b^2/f*arccot(d*x+c)*arctan(d*x
+c)*e^3+b^2*f*arccot(d*x+c)^2*e*x^2+2/3*a*b/f*arctan(d*x+c)*e^3+1/12*I/d^3*
b^2*ln(I+d*x+c)^2*f^2-1/12*I/d^3*b^2*ln(d*x+c-I)^2*f^2-1/6*I/d^3*b^2*dilog(
-1/2*I*(I+d*x+c))*f^2+1/3*a^2/f*e^3+1/3/d^3*b^2*f^2*c+a^2*f*x^2*e+1/3*b^2/f
*arctan(d*x+c)^2*e^3+1/3*b^2*f^2*arccot(d*x+c)^2*x^3+arccot(d*x+c)^2*x*b^2*
e^2+1/3*b^2/f*arccot(d*x+c)^2*e^3-2/d*arctan(d*x+c)*a*b*c*e^2+1/d^3*a*b*f^2
*ln(1+(d*x+c)^2)*c^2+2/d^3*a*b*f^2*arctan(d*x+c)*c-2/3/d^3*a*b*f^2*arctan(d
*x+c)*c^3+1/d^2*b^2*f*arctan(d*x+c)^2*c^2*e+1/3*a^2*f^2*x^3-4/3*a*b/d^2*f^2
*c*x+2*a*b/d*f*e*x-2/d^2*a*b*f*arctan(d*x+c)*e-2/3/d^3*b^2*f^2*arccot(d*x+c
)*arctan(d*x+c)*c^3-2/d^2*b^2*f*arccot(d*x+c)*arctan(d*x+c)*e+2/d^3*b^2*f^2
*arccot(d*x+c)*arctan(d*x+c)*c+1/4*I/d^3*b^2*ln(d*x+c-I)^2*c^2*f^2+1/2*I/d^
3*b^2*dilog(-1/2*I*(I+d*x+c))*c^2*f^2+1/3*b^2*f^2*x/d^2-1/3*b^2*f^2*arctan(
d*x+c)/d^3+1/2*I/d*b^2*ln(-1/2*I*(I+d*x+c))*ln(d*x+c-I)*e^2-1/6*I/d^3*b^2*l
n(I+d*x+c)*ln(1+(d*x+c)^2)*f^2-1/6*I/d^3*b^2*ln(-1/2*I*(I+d*x+c))*ln(d*x+c-
I)*f^2+1/d^3*b^2*f^2*arccot(d*x+c)*ln(1+(d*x+c)^2)*c^2+I/d^2*b^2*ln(I+d*x+c
)*ln(1/2*I*(d*x+c-I))*c*e*f+I/d^2*b^2*ln(d*x+c-I)*ln(1+(d*x+c)^2)*c*e*f-I/d
^2*b^2*ln(-1/2*I*(I+d*x+c))*ln(d*x+c-I)*c*e*f-I/d^2*b^2*ln(I+d*x+c)*ln(1+(d
*x+c)^2)*c*e*f-1/2*I/d*b^2*ln(d*x+c-I)*ln(1+(d*x+c)^2)*e^2+1/6*I/d^3*b^2*ln
```

```
(d*x+c-I)*ln(1+(d*x+c)^2)*f^2+1/2*I/d*b^2*ln(I+d*x+c)*ln(1+(d*x+c)^2)*e^2+1
/d^3*b^2*f^2*arctan(d*x+c)^2*c-1/d*arctan(d*x+c)^2*b^2*c*e^2+1/d^2*b^2*f*ln
(1+(d*x+c)^2)*e-1/d^2*b^2*f*arctan(d*x+c)^2*e-1/2*I/d*b^2*dilog(1/2*I*(d*x+
c-I))*e^2+1/4*I/d*b^2*ln(d*x+c-I)^2*e^2+1/2*I/d*b^2*dilog(-1/2*I*(I+d*x+c))
*e^2-1/4*I/d*b^2*ln(I+d*x+c)^2*e^2+1/6*I/d^3*b^2*dilog(1/2*I*(d*x+c-I))*f^2
+1/d*b^2*arccot(d*x+c)*ln(1+(d*x+c)^2)*e^2-1/3/d^3*b^2*f^2*arccot(d*x+c)*ln
(1+(d*x+c)^2)+1/3/d*b^2*f^2*arccot(d*x+c)*x^2-5/3/d^3*b^2*f^2*arccot(d*x+c)
*c^2+2/3*a*b*f^2*arccot(d*x+c)*x^3+1/6*I/d^3*b^2*ln(I+d*x+c)*ln(1/2*I*(d*x+
c-I))*f^2-1/2*I/d*b^2*ln(I+d*x+c)*ln(1/2*I*(d*x+c-I))*e^2-1/4*I/d^3*b^2*ln(
I+d*x+c)^2*c^2*f^2-1/2*I/d^3*b^2*dilog(1/2*I*(d*x+c-I))*c^2*f^2+2*a*b*f*arc
cot(d*x+c)*e*x^2-2/d*b^2*arccot(d*x+c)*arctan(d*x+c)*c*e^2-4/3/d^2*b^2*f^2*
arccot(d*x+c)*x*c+2/d*b^2*f*arccot(d*x+c)*e*x+2/d^2*b^2*f*arccot(d*x+c)*e*c
+I/d^2*b^2*dilog(1/2*I*(d*x+c-I))*c*e*f-1/3/d^3*b^2*f^2*arctan(d*x+c)^2*c^3
-1/d^3*b^2*f^2*ln(1+(d*x+c)^2)*c+1/3/d*a*b*f^2*x^2+1/d*e^2*a*b*ln(1+(d*x+c)
^2)+2/d^2*a*b*f*c*e-2/d^2*b^2*f*arccot(d*x+c)*ln(1+(d*x+c)^2)*c*e+2/d^2*b^2
*f*arccot(d*x+c)*arctan(d*x+c)*c^2*e-I/d^2*b^2*dilog(-1/2*I*(I+d*x+c))*c*e*
f+1/2*I/d^2*b^2*ln(I+d*x+c)^2*c*e*f+1/2*I/d^3*b^2*ln(I+d*x+c)*ln(1+(d*x+c)^
2)*c^2*f^2-1/2*I/d^3*b^2*ln(I+d*x+c)*ln(1/2*I*(d*x+c-I))*c^2*f^2-1/2*I/d^3*
b^2*ln(d*x+c-I)*ln(1+(d*x+c)^2)*c^2*f^2+1/2*I/d^3*b^2*ln(-1/2*I*(I+d*x+c))*
ln(d*x+c-I)*c^2*f^2-1/2*I/d^2*b^2*ln(d*x+c-I)^2*c*e*f+2/d^2*a*b*f*arctan(d*
x+c)*e*c^2-2/d^2*a*b*f*ln(1+(d*x+c)^2)*c*e
```

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

$$\frac{1}{12}b^2f^2x^3\arctan(1,dx+c)^2+\frac{1}{4}b^2efx^2\arctan(1,dx+c)^2+\frac{1}{3}a^2f^2x^3+\frac{1}{4}b^2e^2x\arctan(1,dx+c)^2+a^2efx^2+2\Bigg($$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/12*b^2*f^2*x^3*arctan2(1, d*x + c)^2 + 1/4*b^2*e*f*x^2*arctan2(1, d*x + c
)^2 + 1/3*a^2*f^2*x^3 + 1/4*b^2*e^2*x*arctan2(1, d*x + c)^2 + a^2*e*f*x^2 +
 2*(x^2*arccot(d*x + c) + d*(x/d^2 + (c^2 - 1)*arctan((d^2*x + c*d)/d)/d^3
- c*log(d^2*x^2 + 2*c*d*x + c^2 + 1)/d^3))*a*b*e*f + 1/3*(2*x^3*arccot(d*x
+ c) + d*((d*x^2 - 4*c*x)/d^3 - 2*(c^3 - 3*c)*arctan((d^2*x + c*d)/d)/d^4 +
 (3*c^2 - 1)*log(d^2*x^2 + 2*c*d*x + c^2 + 1)/d^4))*a*b*f^2 + a^2*e^2*x + (
2*(d*x + c)*arccot(d*x + c) + log((d*x + c)^2 + 1))*a*b*e^2/d - 1/48*(b^2*f
^2*x^3 + 3*b^2*e*f*x^2 + 3*b^2*e^2*x)*log(d^2*x^2 + 2*c*d*x + c^2 + 1)^2 +
integrate(1/48*(36*b^2*d^2*f^2*x^4*arctan2(1, d*x + c)^2 + 8*(9*b^2*d^2*e*f
*arctan2(1, d*x + c)^2 + (9*b^2*c*arctan2(1, d*x + c)^2 + b^2*arctan2(1, d*
x + c))*d*f^2)*x^3 + 36*(b^2*c^2*arctan2(1, d*x + c)^2 + b^2*arctan2(1, d*x
 + c)^2)*e^2 + 12*(3*b^2*d^2*e^2*arctan2(1, d*x + c)^2 + 2*(6*b^2*c*arctan2
(1, d*x + c)^2 + b^2*arctan2(1, d*x + c))*d*e*f + 3*(b^2*c^2*arctan2(1, d*x
 + c)^2 + b^2*arctan2(1, d*x + c)^2)*f^2)*x^2 + 3*(b^2*d^2*f^2*x^4 + 2*(b^2
*d^2*e*f + b^2*c*d*f^2)*x^3 + (b^2*c^2 + b^2)*e^2 + (b^2*d^2*e^2 + 4*b^2*c*
d*e*f + (b^2*c^2 + b^2)*f^2)*x^2 + 2*(b^2*c*d*e^2 + (b^2*c^2 + b^2)*e*f)*x)
*log(d^2*x^2 + 2*c*d*x + c^2 + 1)^2 + 24*((3*b^2*c*arctan2(1, d*x + c)^2 +
b^2*arctan2(1, d*x + c))*d*e^2 + 3*(b^2*c^2*arctan2(1, d*x + c)^2 + b^2*arc
tan2(1, d*x + c)^2)*e*f)*x + 4*(b^2*d^2*f^2*x^4 + 3*b^2*c*d*e^2*x + (3*b^2*
d^2*e*f + b^2*c*d*f^2)*x^3 + 3*(b^2*d^2*e^2 + b^2*c*d*e*f)*x^2)*log(d^2*x^2
 + 2*c*d*x + c^2 + 1))/(d^2*x^2 + 2*c*d*x + c^2 + 1), x)
```

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

$$\int {\left(e+f\,x\right)}^2\,{\left(a+b\,\mathrm{acot}\left(c+d\,x\right)\right)}^2 \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] int((e + f*x)^2*(a + b*acot(c + d*x))^2, x)
```

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

$$\int (a + b\operatorname{acot}(c + dx))^2 \left(e + fx\right)^2 \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Integral((a + b*acot(c + d*x))**2*(e + f*x)**2, x)
```

3.137 $\int (e+fx)\left(a+b\cot^{-1}(c+dx)\right)^2\,dx$

Optimal. Leaf size=220

$$\frac{i(de-cf)\left(a+b\cot^{-1}(c+dx)\right)^2}{d^2}-\frac{(-cf+de+f)(de-(c+1)f)\left(a+b\cot^{-1}(c+dx)\right)^2}{2d^2f}-\frac{2b(de-cf)\log\left(\frac{2}{1+i(c+\right.}{}$$

```
[Out] a*b*f*x/d+b^2*f*(d*x+c)*arccot(d*x+c)/d^2+I*(-c*f+d*e)*(a+b*arccot(d*x+c))^
2/d^2-1/2*(-c*f+d*e+f)*(d*e-(1+c)*f)*(a+b*arccot(d*x+c))^2/d^2/f+1/2*(f*x+e
)^2*(a+b*arccot(d*x+c))^2/f-2*b*(-c*f+d*e)*(a+b*arccot(d*x+c))*ln(2/(1+I*(d
*x+c)))/d^2+1/2*b^2*f*ln(1+(d*x+c)^2)/d^2+I*b^2*(-c*f+d*e)*polylog(2,1-2/(1
+I*(d*x+c)))/d^2
```

Rubi [A] time = 0.38, antiderivative size = 220, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 10, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.556, Rules used = {5048, 4865, 4847, 260, 4985, 4885, 4921, 4855, 2402, 2315}

$$\frac{ib^2(de-cf)\text{PolyLog}\left(2,1-\frac{2}{1+i(c+dx)}\right)}{d^2}+\frac{i(de-cf)\left(a+b\cot^{-1}(c+dx)\right)^2}{d^2}-\frac{(-cf+de+f)(de-(c+1)f)\left(a+b\right.}{2d^2f}$$

Antiderivative was successfully verified.

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

```
[Out] (a*b*f*x)/d + (b^2*f*(c + d*x)*ArcCot[c + d*x])/d^2 + (I*(d*e - c*f)*(a + b
*ArcCot[c + d*x])^2)/d^2 - ((d*e + f - c*f)*(d*e - (1 + c)*f)*(a + b*ArcCot
[c + d*x])^2)/(2*d^2*f) + ((e + f*x)^2*(a + b*ArcCot[c + d*x])^2)/(2*f) - (
2*b*(d*e - c*f)*(a + b*ArcCot[c + d*x])*Log[2/(1 + I*(c + d*x))])/d^2 + (b^
2*f*Log[1 + (c + d*x)^2])/(2*d^2) + (I*b^2*(d*e - c*f)*PolyLog[2, 1 - 2/(1
+ I*(c + d*x))])/d^2
```

Rule 260

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

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2402

```
Int[Log[(c_.)/((d_) + (e_.)*(x_))]/((f_) + (g_.)*(x_)^2), x_Symbol] :> -Dis
t[e/g, Subst[Int[Log[2*d*x]/(1 - 2*d*x), x], x, 1/(d + e*x)], x] /; FreeQ[{
c, d, e, f, g}, x] && EqQ[c, 2*d] && EqQ[e^2*f + d^2*g, 0]
```

Rule 4847

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b*Ar
cCot[c*x])^p, x] + Dist[b*c*p, Int[(x*(a + b*ArcCot[c*x])^(p - 1))/(1 + c^2
*x^2), x], x] /; FreeQ[{a, b, c}, x] && IGtQ[p, 0]
```

Rule 4855

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symbol]
 :> -Simp[((a + b*ArcCot[c*x])^p*Log[2/(1 + (e*x)/d)])/e, x] - Dist[(b*c*p)
/e, Int[((a + b*ArcCot[c*x])^(p - 1)*Log[2/(1 + (e*x)/d)])/(1 + c^2*x^2), x
```

```
], x] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[p, 0] && EqQ[c^2*d^2 + e^2, 0]
```

Rule 4865

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_)*((d_) + (e_.)*(x_))^(q_.), x_Sy
mbol] :> Simp[((d + e*x)^(q + 1)*(a + b*ArcCot[c*x])^p)/(e*(q + 1)), x] + D
ist[(b*c*p)/(e*(q + 1)), Int[ExpandIntegrand[(a + b*ArcCot[c*x])^(p - 1), (
d + e*x)^(q + 1)/(1 + c^2*x^2), x], x], x] /; FreeQ[{a, b, c, d, e}, x] &&
IGtQ[p, 1] && IntegerQ[q] && NeQ[q, -1]
```

Rule 4885

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)^2), x_Symbo
l] :> -Simp[(a + b*ArcCot[c*x])^(p + 1)/(b*c*d*(p + 1)), x] /; FreeQ[{a, b,
 c, d, e, p}, x] && EqQ[e, c^2*d] && NeQ[p, -1]
```

Rule 4921

```
Int[(((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)*(x_))/((d_) + (e_.)*(x_)^2),
x_Symbol] :> Simp[(I*(a + b*ArcCot[c*x])^(p + 1))/(b*e*(p + 1)), x] - Dist[
1/(c*d), Int[(a + b*ArcCot[c*x])^p/(I - c*x), x], x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[e, c^2*d] && IGtQ[p, 0]
```

Rule 4985

```
Int[(((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)*((f_) + (g_.)*(x_))^(m_.))/((
d_) + (e_.)*(x_)^2), x_Symbol] :> Int[ExpandIntegrand[(a + b*ArcCot[c*x])^p
/(d + e*x^2), (f + g*x)^m, x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && IGt
Q[p, 0] && EqQ[e, c^2*d] && IGtQ[m, 0]
```

Rule 5048

```
Int[((a_.) + ArcCot[(c_) + (d_.)*(x_)]*(b_.))^(p_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cCot[x])^p, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, p}, x] && IG
tQ[p, 0]
```

Rubi steps

$$\int (e+fx)\left(a+b\cot^{-1}(c+dx)\right)^2\,dx = \frac{\text{Subst}\left(\int \left(\frac{de-cf}{d}+\frac{fx}{d}\right)\left(a+b\cot^{-1}(x)\right)^2\,dx,x,c+dx\right)}{d}$$

$$= \frac{(e+fx)^2\left(a+b\cot^{-1}(c+dx)\right)^2}{2f} + \frac{b\,\text{Subst}\left(\int\left(\frac{f^2\left(a+b\cot^{-1}(x)\right)}{d^2}+\frac{((de-f-c}{}\right.\right.}{}$$

$$= \frac{(e+fx)^2\left(a+b\cot^{-1}(c+dx)\right)^2}{2f} + \frac{b\,\text{Subst}\left(\int \frac{((de-f-cf)(de+f-cf)+2f(de-c}{1+x^2}\right.}{d^2f}$$

$$= \frac{abfx}{d} + \frac{(e+fx)^2\left(a+b\cot^{-1}(c+dx)\right)^2}{2f} + \frac{b\,\text{Subst}\left(\int\left(\frac{(de+f-cf)(de-(1+c}{1+x}\right.\right.}{}$$

$$= \frac{abfx}{d} + \frac{b^2f(c+dx)\cot^{-1}(c+dx)}{d^2} + \frac{(e+fx)^2\left(a+b\cot^{-1}(c+dx)\right)^2}{2f} +$$

$$= \frac{abfx}{d} + \frac{b^2f(c+dx)\cot^{-1}(c+dx)}{d^2} + \frac{i(de-cf)\left(a+b\cot^{-1}(c+dx)\right)^2}{d^2} -$$

$$= \frac{abfx}{d} + \frac{b^2f(c+dx)\cot^{-1}(c+dx)}{d^2} + \frac{i(de-cf)\left(a+b\cot^{-1}(c+dx)\right)^2}{d^2} -$$

$$= \frac{abfx}{d} + \frac{b^2f(c+dx)\cot^{-1}(c+dx)}{d^2} + \frac{i(de-cf)\left(a+b\cot^{-1}(c+dx)\right)^2}{d^2} -$$

$$= \frac{abfx}{d} + \frac{b^2f(c+dx)\cot^{-1}(c+dx)}{d^2} + \frac{i(de-cf)\left(a+b\cot^{-1}(c+dx)\right)^2}{d^2} -$$

Mathematica [A] time = 0.58, size = 286, normalized size = 1.30

$$\frac{-a^2c^2f+2a^2cde+2a^2d^2ex+a^2d^2fx^2+2b\cot^{-1}(c+dx)\left(-((c+dx)(acf-ad(2e+fx)-bf))-2b(de-cf)\,\mathrm{l}\right.}{}$$

Warning: Unable to verify antiderivative.

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

```
[Out] (2*a^2*c*d*e + 2*a*b*c*f - a^2*c^2*f + 2*a^2*d^2*e*x + 2*a*b*d*f*x + a^2*d^
2*f*x^2 + b^2*(I + c + d*x)*(-((I + c)*f) + d*(2*e + f*x))*ArcCot[c + d*x]^
2 - 2*a*b*f*ArcTan[c + d*x] + 2*b*ArcCot[c + d*x]*(-((c + d*x)*(-(b*f) + a*
c*f - a*d*(2*e + f*x))) - 2*b*(d*e - c*f)*Log[1 - E^((2*I)*ArcCot[c + d*x])
]) - 4*a*b*d*e*Log[1/((c + d*x)*Sqrt[1 + (c + d*x)^(-2)])] - 2*b^2*f*Log[1/
((c + d*x)*Sqrt[1 + (c + d*x)^(-2)])] + 4*a*b*c*f*Log[1/((c + d*x)*Sqrt[1 +
 (c + d*x)^(-2)])] + (2*I)*b^2*(d*e - c*f)*PolyLog[2, E^((2*I)*ArcCot[c + d
*x])])/(2*d^2)
```

fricas [F] time = 0.54, size = 0, normalized size = 0.00

$$\text{integral}\left(a^2fx+a^2e+\left(b^2fx+b^2e\right)\text{arccot}\left(dx+c\right)^2+2\left(abfx+abe\right)\text{arccot}\left(dx+c\right),x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integral(a^2*f*x + a^2*e + (b^2*f*x + b^2*e)*arccot(d*x + c)^2 + 2*(a*b*f*x
 + a*b*e)*arccot(d*x + c), x)
```

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

$$\int (fx+e)(b\operatorname{arccot}(dx+c)+a)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate((f*x + e)*(b*arccot(d*x + c) + a)^2, x)
```

maple [B] time = 0.15, size = 766, normalized size = 3.48

$$\frac{2\operatorname{arccot}(dx+c)\,abce}{d}+\frac{a^2x^2f}{2}+a^2xe-\frac{ib^2\ln\left(-\frac{i(dx+c+i)}{2}\right)\ln(dx+c-i)\,cf}{2d^2}-\frac{ib^2\ln\left(1+(dx+c)^2\right)\ln(dx+c+i)\,cf}{2d^2}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/2*I/d*b^2*ln(-1/2*I*(I+d*x+c))*ln(d*x+c-I)*e-1/2*I/d^2*b^2*dilog(-1/2*I*(
I+d*x+c))*c*f+1/4*I/d^2*b^2*ln(I+d*x+c)^2*c*f+1/2*I/d^2*b^2*dilog(1/2*I*(d*
x+c-I))*c*f-1/4*I/d^2*b^2*ln(d*x+c-I)^2*c*f-1/2*I/d*b^2*ln(1/2*I*(d*x+c-I))
*ln(I+d*x+c)*e+2/d*arccot(d*x+c)*a*b*c*e+1/2*I/d*b^2*ln(1+(d*x+c)^2)*ln(I+d
*x+c)*e-1/2*I/d*b^2*ln(1+(d*x+c)^2)*ln(d*x+c-I)*e+1/2*a^2*x^2*f+a^2*x*e+1/4
*I/d*b^2*ln(d*x+c-I)^2*e+1/2*I/d*b^2*dilog(-1/2*I*(I+d*x+c))*e-1/4*I/d*b^2*
ln(I+d*x+c)^2*e-1/2*I/d*b^2*dilog(1/2*I*(d*x+c-I))*e+2*arccot(d*x+c)*x*a*b*
e-1/2/d^2*b^2*arccot(d*x+c)^2*c^2*f+1/d*b^2*arccot(d*x+c)*f*x+1/d^2*b^2*arc
cot(d*x+c)*f*c-1/d^2*b^2*arccot(d*x+c)*arctan(d*x+c)*f+1/d*b^2*arccot(d*x+c
)*ln(1+(d*x+c)^2)*e+1/d*arccot(d*x+c)^2*b^2*c*e-1/d^2*a*b*f*arctan(d*x+c)+a
*b*arccot(d*x+c)*f*x^2-1/2/d^2*b^2*f*arctan(d*x+c)^2+1/2*b^2*arccot(d*x+c)^
2*f*x^2+arccot(d*x+c)^2*x*b^2*e-1/2/d^2*a^2*f*c^2+1/d*a^2*c*e+1/d^2*a*b*c*f
-1/2*I/d^2*b^2*ln(-1/2*I*(I+d*x+c))*ln(d*x+c-I)*c*f-1/2*I/d^2*b^2*ln(1+(d*x
+c)^2)*ln(I+d*x+c)*c*f+1/2*I/d^2*b^2*ln(1/2*I*(d*x+c-I))*ln(I+d*x+c)*c*f+1/
2*I/d^2*b^2*ln(1+(d*x+c)^2)*ln(d*x+c-I)*c*f+a*b*f*x/d+1/2*b^2*f*ln(1+(d*x+c
)^2)/d^2+1/d*a*b*ln(1+(d*x+c)^2)*e-1/d^2*a*b*arccot(d*x+c)*f*c^2-1/d^2*a*b*
ln(1+(d*x+c)^2)*c*f-1/d^2*b^2*arccot(d*x+c)*ln(1+(d*x+c)^2)*c*f
```

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

$$\frac{1}{8}b^2fx^2\arctan(1,dx+c)^2+\frac{1}{4}b^2ex\arctan(1,dx+c)^2+\frac{1}{2}a^2fx^2+\left(x^2\operatorname{arccot}(dx+c)+d\left(\frac{x}{d^2}+\frac{(c^2-1)\arctan\left(\frac{d^2}{}\right.}{d^3}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/8*b^2*f*x^2*arctan2(1, d*x + c)^2 + 1/4*b^2*e*x*arctan2(1, d*x + c)^2 + 1
/2*a^2*f*x^2 + (x^2*arccot(d*x + c) + d*(x/d^2 + (c^2 - 1)*arctan((d^2*x +
c*d)/d)/d^3 - c*log(d^2*x^2 + 2*c*d*x + c^2 + 1)/d^3))*a*b*f + a^2*e*x + (2
*(d*x + c)*arccot(d*x + c) + log((d*x + c)^2 + 1))*a*b*e/d - 1/32*(b^2*f*x^
2 + 2*b^2*e*x)*log(d^2*x^2 + 2*c*d*x + c^2 + 1)^2 + integrate(1/16*(12*b^2*
d^2*f*x^3*arctan2(1, d*x + c)^2 + 4*(3*b^2*d^2*e*arctan2(1, d*x + c)^2 + (6
*b^2*c*arctan2(1, d*x + c)^2 + b^2*arctan2(1, d*x + c))*d*f)*x^2 + (b^2*d^2
*f*x^3 + (b^2*d^2*e + 2*b^2*c*d*f)*x^2 + (b^2*c^2 + b^2)*e + (2*b^2*c*d*e +
 (b^2*c^2 + b^2)*f)*x)*log(d^2*x^2 + 2*c*d*x + c^2 + 1)^2 + 12*(b^2*c^2*arc
```

```
tan2(1, d*x + c)^2 + b^2*arctan2(1, d*x + c)^2)*e + 4*(2*(3*b^2*c*arctan2(1
, d*x + c)^2 + b^2*arctan2(1, d*x + c))*d*e + 3*(b^2*c^2*arctan2(1, d*x + c
)^2 + b^2*arctan2(1, d*x + c)^2)*f)*x + 2*(b^2*d^2*f*x^3 + 2*b^2*c*d*e*x +
(2*b^2*d^2*e + b^2*c*d*f)*x^2)*log(d^2*x^2 + 2*c*d*x + c^2 + 1))/(d^2*x^2 +
 2*c*d*x + c^2 + 1), x)
```

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

$$\int \left(e+f\,x\right)\,{\left(a+b\,\mathrm{acot}\left(c+d\,x\right)\right)}^2 \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] int((e + f*x)*(a + b*acot(c + d*x))^2, x)
```

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

$$\int \left(a+b\,\mathrm{acot}\left(c+dx\right)\right)^2\left(e+fx\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Integral((a + b*acot(c + d*x))**2*(e + f*x), x)
```

3.138 $\int \left(a+b\cot^{-1}(c+dx)\right)^2\,dx$

Optimal. Leaf size=102

$$\frac{(c+dx)\left(a+b\cot^{-1}(c+dx)\right)^2}{d}+\frac{i\left(a+b\cot^{-1}(c+dx)\right)^2}{d}-\frac{2b\log\left(\frac{2}{1+i(c+dx)}\right)\left(a+b\cot^{-1}(c+dx)\right)}{d}+\frac{ib^2\mathrm{Li}_2\left(1-\frac{\cdots}{i(c+\cdots}\right.}{d}$$

```
[Out] I*(a+b*arccot(d*x+c))^2/d+(d*x+c)*(a+b*arccot(d*x+c))^2/d-2*b*(a+b*arccot(d
*x+c))*ln(2/(1+I*(d*x+c)))/d+I*b^2*polylog(2,1-2/(1+I*(d*x+c)))/d
```

Rubi [A] time = 0.12, antiderivative size = 102, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.500, Rules used = {5040, 4847, 4921, 4855, 2402, 2315}

$$\frac{ib^2\text{PolyLog}\left(2,1-\frac{2}{1+i(c+dx)}\right)}{d}+\frac{(c+dx)\left(a+b\cot^{-1}(c+dx)\right)^2}{d}+\frac{i\left(a+b\cot^{-1}(c+dx)\right)^2}{d}-\frac{2b\log\left(\frac{2}{1+i(c+dx)}\right)\left(a+b\cdots\right.}{d}$$

Antiderivative was successfully verified.

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

```
[Out] (I*(a + b*ArcCot[c + d*x])^2)/d + ((c + d*x)*(a + b*ArcCot[c + d*x])^2)/d -
 (2*b*(a + b*ArcCot[c + d*x])*Log[2/(1 + I*(c + d*x))])/d + (I*b^2*PolyLog[
2, 1 - 2/(1 + I*(c + d*x))])/d
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2402

```
Int[Log[(c_.)/((d_) + (e_.)*(x_))]/((f_) + (g_.)*(x_)^2), x_Symbol] :> -Dis
t[e/g, Subst[Int[Log[2*d*x]/(1 - 2*d*x), x], x, 1/(d + e*x)], x] /; FreeQ[{
c, d, e, f, g}, x] && EqQ[c, 2*d] && EqQ[e^2*f + d^2*g, 0]
```

Rule 4847

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b*Ar
cCot[c*x])^p, x] + Dist[b*c*p, Int[(x*(a + b*ArcCot[c*x])^(p - 1))/(1 + c^2
*x^2), x], x] /; FreeQ[{a, b, c}, x] && IGtQ[p, 0]
```

Rule 4855

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symbol]
 :> -Simp[((a + b*ArcCot[c*x])^p*Log[2/(1 + (e*x)/d)])/e, x] - Dist[(b*c*p)
/e, Int[((a + b*ArcCot[c*x])^(p - 1)*Log[2/(1 + (e*x)/d)])/(1 + c^2*x^2), x
], x] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[p, 0] && EqQ[c^2*d^2 + e^2, 0]
```

Rule 4921

```
Int[(((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)*(x_))/((d_) + (e_.)*(x_)^2),
x_Symbol] :> Simp[(I*(a + b*ArcCot[c*x])^(p + 1))/(b*e*(p + 1)), x] - Dist[
1/(c*d), Int[(a + b*ArcCot[c*x])^p/(I - c*x), x], x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[e, c^2*d] && IGtQ[p, 0]
```

Rule 5040

```
Int[((a_.) + ArcCot[(c_) + (d_.)*(x_)]*(b_.))^(p_.), x_Symbol] :> Dist[1/d,
 Subst[Int[(a + b*ArcCot[x])^p, x], x, c + d*x], x] /; FreeQ[{a, b, c, d},
x] && IGtQ[p, 0]
```

Rubi steps

$$\int \left(a+b\cot^{-1}(c+dx)\right)^2\,dx=\frac{\text{Subst}\left(\int \left(a+b\cot^{-1}(x)\right)^2\,dx,x,c+dx\right)}{d}$$

$$=\frac{(c+dx)\left(a+b\cot^{-1}(c+dx)\right)^2}{d}+\frac{(2b)\,\text{Subst}\left(\int \frac{x\left(a+b\cot^{-1}(x)\right)}{1+x^2}\,dx,x,c+dx\right)}{d}$$

$$=\frac{i\left(a+b\cot^{-1}(c+dx)\right)^2}{d}+\frac{(c+dx)\left(a+b\cot^{-1}(c+dx)\right)^2}{d}-\frac{(2b)\,\text{Subst}\left(\int \frac{a+b\,\text{co}}{i-}\right.}{}$$

$$=\frac{i\left(a+b\cot^{-1}(c+dx)\right)^2}{d}+\frac{(c+dx)\left(a+b\cot^{-1}(c+dx)\right)^2}{d}-\frac{2b\left(a+b\cot^{-1}(c+\right.}{}$$

$$=\frac{i\left(a+b\cot^{-1}(c+dx)\right)^2}{d}+\frac{(c+dx)\left(a+b\cot^{-1}(c+dx)\right)^2}{d}-\frac{2b\left(a+b\cot^{-1}(c+\right.}{}$$

$$=\frac{i\left(a+b\cot^{-1}(c+dx)\right)^2}{d}+\frac{(c+dx)\left(a+b\cot^{-1}(c+dx)\right)^2}{d}-\frac{2b\left(a+b\cot^{-1}(c+\right.}{}$$

Mathematica [A] time = 0.17, size = 118, normalized size = 1.16

$$\frac{a\left(ac+adx-2b\log\left(\frac{1}{(c+dx)\sqrt{\frac{1}{(c+dx)^2}+1}}\right)\right)+2b\cot^{-1}(c+dx)\left(ac+adx-b\log\left(1-e^{2i\cot^{-1}(c+dx)}\right)\right)+ib^2\text{Li}_2\left(e^{2i\,\text{co}}\right.}{d}$$

Warning: Unable to verify antiderivative.

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

```
[Out] (b^2*(I + c + d*x)*ArcCot[c + d*x]^2 + 2*b*ArcCot[c + d*x]*(a*c + a*d*x - b
*Log[1 - E^((2*I)*ArcCot[c + d*x])]) + a*(a*c + a*d*x - 2*b*Log[1/((c + d*x
)*Sqrt[1 + (c + d*x)^(-2)])]) + I*b^2*PolyLog[2, E^((2*I)*ArcCot[c + d*x])]
)/d
```

fricas [F] time = 0.62, size = 0, normalized size = 0.00

$$\text{integral}\left(b^2\,\text{arccot}\,(dx+c)^2+2\,ab\,\text{arccot}\,(dx+c)+a^2,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integral(b^2*arccot(d*x + c)^2 + 2*a*b*arccot(d*x + c) + a^2, x)
```

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

$$\int (b\,\text{arccot}\,(dx+c)+a)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate((b*arccot(d*x + c) + a)^2, x)
```

maple [B] time = 0.33, size = 236, normalized size = 2.31

$$\operatorname{arccot}(dx+c)^2 x b^2 + \frac{i\operatorname{arccot}(dx+c)^2 b^2}{d} + \frac{\operatorname{arccot}(dx+c)^2 b^2 c}{d} + 2\operatorname{arccot}(dx+c)\, xab - \frac{2\ln\left(1-\frac{dx+c+i}{\sqrt{1+(dx+c)^2}}\right)\operatorname{arcc}}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] arccot(d*x+c)^2*x*b^2+I/d*arccot(d*x+c)^2*b^2+1/d*arccot(d*x+c)^2*b^2*c+2*a
rccot(d*x+c)*x*a*b-2/d*ln(1-(I+d*x+c)/(1+(d*x+c)^2)^(1/2))*arccot(d*x+c)*b^
2-2/d*ln(1+(I+d*x+c)/(1+(d*x+c)^2)^(1/2))*arccot(d*x+c)*b^2+2/d*arccot(d*x+
c)*a*b*c+2*I/d*polylog(2,(I+d*x+c)/(1+(d*x+c)^2)^(1/2))*b^2+2*I/d*polylog(2
,-(I+d*x+c)/(1+(d*x+c)^2)^(1/2))*b^2+a^2*x+1/d*a*b*ln(1+(d*x+c)^2)+a^2*c/d
```

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

$$\frac{1}{16}\left(4\,x\arctan(1,dx+c)^2 - x\log\left(d^2x^2+2\,cdx+c^2+1\right)^2 + 16\int \frac{12\,d^2x^2\arctan(1,dx+c)^2+12\,c^2\arctan(1,d}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/16*(4*x*arctan2(1, d*x + c)^2 - x*log(d^2*x^2 + 2*c*d*x + c^2 + 1)^2 + 16
*integrate(1/16*(12*d^2*x^2*arctan2(1, d*x + c)^2 + 12*c^2*arctan2(1, d*x +
 c)^2 + 8*(3*c*arctan2(1, d*x + c)^2 + arctan2(1, d*x + c))*d*x + (d^2*x^2
+ 2*c*d*x + c^2 + 1)*log(d^2*x^2 + 2*c*d*x + c^2 + 1)^2 + 12*arctan2(1, d*x
 + c)^2 + 4*(d^2*x^2 + c*d*x)*log(d^2*x^2 + 2*c*d*x + c^2 + 1))/(d^2*x^2 +
2*c*d*x + c^2 + 1), x))*b^2 + a^2*x + (2*(d*x + c)*arccot(d*x + c) + log((d
*x + c)^2 + 1))*a*b/d
```

mupad [B] time = 0.97, size = 123, normalized size = 1.21

$$a^2\,x + \frac{a\,b\,\left(\ln\left({\left(c+d\,x\right)}^2+1\right)+2\,\mathrm{acot}\left(c+d\,x\right)\,\left(c+d\,x\right)\right)}{d} - \frac{2\,b^2\,\ln\left(1-{\mathrm{e}}^{\mathrm{acot}\left(c+d\,x\right)\,2{}\mathrm{i}}\right)\,\mathrm{acot}\left(c+d\,x\right)}{d} + \frac{b^2\,\mathrm{acot}\left(c+d\right.}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] a^2*x + (b^2*polylog(2, exp(acot(c + d*x)*2i))*1i)/d + (b^2*acot(c + d*x)^2
*1i)/d + (a*b*(log((c + d*x)^2 + 1) + 2*acot(c + d*x)*(c + d*x)))/d - (2*b^
2*log(1 - exp(acot(c + d*x)*2i))*acot(c + d*x))/d + (b^2*acot(c + d*x)^2*(c
 + d*x))/d
```

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

$$\int \left(a + b\operatorname{acot}(c+dx)\right)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

3.139 $\int \frac{\left(a+b\cot^{-1}(c+dx)\right)^2}{e+fx}\,dx$

Optimal. Leaf size=261

$$\frac{ib\left(a+b\cot^{-1}(c+dx)\right)\mathrm{Li}_2\left(1-\frac{2d(e+fx)}{(de-cf+if)(1-i(c+dx))}\right)}{f}+\frac{\left(a+b\cot^{-1}(c+dx)\right)^2\log\left(\frac{2d(e+fx)}{(1-i(c+dx))(-cf+de+if)}\right)}{f}-\frac{ib\mathrm{Li}_2\left(1\right.}{}$$

```
[Out] -(a+b*arccot(d*x+c))^2*ln(2/(1-I*(d*x+c)))/f+(a+b*arccot(d*x+c))^2*ln(2*d*(
f*x+e)/(d*e+I*f-c*f)/(1-I*(d*x+c)))/f-I*b*(a+b*arccot(d*x+c))*polylog(2,1-2
/(1-I*(d*x+c)))/f+I*b*(a+b*arccot(d*x+c))*polylog(2,1-2*d*(f*x+e)/(d*e+I*f-
c*f)/(1-I*(d*x+c)))/f-1/2*b^2*polylog(3,1-2/(1-I*(d*x+c)))/f+1/2*b^2*polylo
g(3,1-2*d*(f*x+e)/(d*e+I*f-c*f)/(1-I*(d*x+c)))/f
```

Rubi [A] time = 0.18, antiderivative size = 261, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.100, Rules used = {5048, 4859}

$$\frac{ib\left(a+b\cot^{-1}(c+dx)\right)\mathrm{PolyLog}\left(2,1-\frac{2d(e+fx)}{(1-i(c+dx))(-cf+de+if)}\right)}{f}-\frac{ib\mathrm{PolyLog}\left(2,1-\frac{2}{1-i(c+dx)}\right)\left(a+b\cot^{-1}(c+dx\right.}{f}$$

Antiderivative was successfully verified.

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

```
[Out] -(((a + b*ArcCot[c + d*x])^2*Log[2/(1 - I*(c + d*x))])/f) + ((a + b*ArcCot[
c + d*x])^2*Log[(2*d*(e + f*x))/((d*e + I*f - c*f)*(1 - I*(c + d*x)))])/f -
 (I*b*(a + b*ArcCot[c + d*x])*PolyLog[2, 1 - 2/(1 - I*(c + d*x))])/f + (I*b
*(a + b*ArcCot[c + d*x])*PolyLog[2, 1 - (2*d*(e + f*x))/((d*e + I*f - c*f)*
(1 - I*(c + d*x)))])/f - (b^2*PolyLog[3, 1 - 2/(1 - I*(c + d*x))])/(2*f) +
(b^2*PolyLog[3, 1 - (2*d*(e + f*x))/((d*e + I*f - c*f)*(1 - I*(c + d*x)))])
/(2*f)
```

Rule 4859

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^2/((d_) + (e_.)*(x_)), x_Symbol] :>
-Simp[((a + b*ArcCot[c*x])^2*Log[2/(1 - I*c*x)])/e, x] + (Simp[((a + b*ArcC
ot[c*x])^2*Log[(2*c*(d + e*x))/((c*d + I*e)*(1 - I*c*x))])/e, x] - Simp[(I*
b*(a + b*ArcCot[c*x])*PolyLog[2, 1 - 2/(1 - I*c*x)])/e, x] + Simp[(I*b*(a +
 b*ArcCot[c*x])*PolyLog[2, 1 - (2*c*(d + e*x))/((c*d + I*e)*(1 - I*c*x))])/
e, x] - Simp[(b^2*PolyLog[3, 1 - 2/(1 - I*c*x)])/(2*e), x] + Simp[(b^2*Poly
Log[3, 1 - (2*c*(d + e*x))/((c*d + I*e)*(1 - I*c*x))])/(2*e), x]) /; FreeQ[
{a, b, c, d, e}, x] && NeQ[c^2*d^2 + e^2, 0]
```

Rule 5048

```
Int[((a_.) + ArcCot[(c_) + (d_.)*(x_)]*(b_.))^(p_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cCot[x])^p, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, p}, x] && IG
tQ[p, 0]
```

Rubi steps

$$\int \frac{(a+b\cot^{-1}(c+dx))^2}{e+fx}\,dx = \frac{\text{Subst}\left(\int \frac{(a+b\cot^{-1}(x))^2}{\frac{de-cf}{d}+\frac{fx}{d}}\,dx, x, c+dx\right)}{d}$$
$$= -\frac{(a+b\cot^{-1}(c+dx))^2 \log\left(\frac{2}{1-i(c+dx)}\right)}{f} + \frac{(a+b\cot^{-1}(c+dx))^2 \log\left(\frac{2d(e+fx)}{(de+if-cf)(1-i(c}\right.}{f}$$

Mathematica [F] time = 7.04, size = 0, normalized size = 0.00

$$\int \frac{(a+b\cot^{-1}(c+dx))^2}{e+fx}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(a + b*ArcCot[c + d*x])^2/(e + f*x),x]
[Out] Integrate[(a + b*ArcCot[c + d*x])^2/(e + f*x), x]
```

fricas [F] time = 0.67, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{b^2 \operatorname{arccot}(dx+c)^2 + 2\,ab \operatorname{arccot}(dx+c) + a^2}{fx+e}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arccot(d*x+c))^2/(f*x+e),x, algorithm="fricas")
[Out] integral((b^2*arccot(d*x + c)^2 + 2*a*b*arccot(d*x + c) + a^2)/(f*x + e), x
)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arccot(d*x+c))^2/(f*x+e),x, algorithm="giac")
[Out] Timed out
```

maple [C] time = 2.53, size = 2201, normalized size = 8.43

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arccot(d*x+c))^2/(f*x+e),x)
[Out] -2*b^2/f*polylog(3,(I+d*x+c)/(1+(d*x+c)^2)^(1/2))-2*b^2/f*polylog(3,-(I+d*x
+c)/(1+(d*x+c)^2)^(1/2))+a^2*ln(f*(d*x+c)-c*f+d*e)/f-b^2/f*arccot(d*x+c)^2*
ln(1+(I+d*x+c)/(1+(d*x+c)^2)^(1/2))+1/2*b^2*c/(-I*f+c*f-d*e)*polylog(3,(d*e
+I*f-c*f)/(-c*f+d*e-I*f)*(I+d*x+c)^2/(1+(d*x+c)^2))-b^2/f*arccot(d*x+c)^2*l
n(1-(I+d*x+c)/(1+(d*x+c)^2)^(1/2))+b^2*ln(f*(d*x+c)-c*f+d*e)/f*arccot(d*x+c
)^2+b^2/f*arccot(d*x+c)^2*ln((I+d*x+c)^2/(1+(d*x+c)^2)-1)-b^2/(-I*f+c*f-d*e
)*arccot(d*x+c)*polylog(2,(d*e+I*f-c*f)/(-c*f+d*e-I*f)*(I+d*x+c)^2/(1+(d*x+
c)^2))-1/2*I*b^2/(-I*f+c*f-d*e)*polylog(3,(d*e+I*f-c*f)/(-c*f+d*e-I*f)*(I+d
*x+c)^2/(1+(d*x+c)^2))+2*I*d*b^2/f*e*arccot(d*x+c)*polylog(2,(d*e+I*f-c*f)/
(-c*f+d*e-I*f)*(I+d*x+c)^2/(1+(d*x+c)^2))/(-2*I*f+2*c*f-2*d*e)+1/2*I*b^2/f*
```

```
Pi*arccot(d*x+c)^2*csgn(I/((I+d*x+c)^2/(1+(d*x+c)^2)-1))*csgn(I*(c*f*(I+d*x
+c)^2/(1+(d*x+c)^2)-d*e*(I+d*x+c)^2/(1+(d*x+c)^2)-c*f+d*e-I*(I+d*x+c)^2/(1+
(d*x+c)^2)*f-I*f))*csgn(I*(c*f*(I+d*x+c)^2/(1+(d*x+c)^2)-d*e*(I+d*x+c)^2/(1
+(d*x+c)^2)-c*f+d*e-I*(I+d*x+c)^2/(1+(d*x+c)^2)*f-I*f)/((I+d*x+c)^2/(1+(d*x
+c)^2)-1))-b^2/f*arccot(d*x+c)^2*ln(c*f*(I+d*x+c)^2/(1+(d*x+c)^2)-d*e*(I+d*
x+c)^2/(1+(d*x+c)^2)-c*f+d*e-I*(I+d*x+c)^2/(1+(d*x+c)^2)*f-I*f)+2*a*b*ln(f*
(d*x+c)-c*f+d*e)/f*arccot(d*x+c)+I*a*b/f*dilog((I*f+f*(d*x+c))/(I*f+c*f-d*e
))+b^2*c/(-I*f+c*f-d*e)*arccot(d*x+c)^2*ln(1-(d*e+I*f-c*f)/(-c*f+d*e-I*f)*(
I+d*x+c)^2/(1+(d*x+c)^2))-I*b^2/f*Pi*arccot(d*x+c)^2+2*I*b^2/f*arccot(d*x+c
)*polylog(2,(I+d*x+c)/(1+(d*x+c)^2)^(1/2))-I*b^2/(-I*f+c*f-d*e)*arccot(d*x+
c)^2*ln(1-(d*e+I*f-c*f)/(-c*f+d*e-I*f)*(I+d*x+c)^2/(1+(d*x+c)^2))+2*I*b^2/f
*arccot(d*x+c)*polylog(2,-(I+d*x+c)/(1+(d*x+c)^2)^(1/2))-I*a*b/f*dilog((I*f
-f*(d*x+c))/(d*e+I*f-c*f))-d*b^2/f*e/(-I*f+c*f-d*e)*arccot(d*x+c)^2*ln(1-(d
*e+I*f-c*f)/(-c*f+d*e-I*f)*(I+d*x+c)^2/(1+(d*x+c)^2))-1/2*I*b^2/f*Pi*arccot
(d*x+c)^2*csgn(I/((I+d*x+c)^2/(1+(d*x+c)^2)-1))*csgn(I*(c*f*(I+d*x+c)^2/(1+
(d*x+c)^2)-d*e*(I+d*x+c)^2/(1+(d*x+c)^2)-c*f+d*e-I*(I+d*x+c)^2/(1+(d*x+c)^2
)*f-I*f)/((I+d*x+c)^2/(1+(d*x+c)^2)-1))^2-1/2*I*b^2/f*Pi*arccot(d*x+c)^2*cs
gn(I*(c*f*(I+d*x+c)^2/(1+(d*x+c)^2)-d*e*(I+d*x+c)^2/(1+(d*x+c)^2)-c*f+d*e-I
*(I+d*x+c)^2/(1+(d*x+c)^2)*f-I*f))*csgn(I*(c*f*(I+d*x+c)^2/(1+(d*x+c)^2)-d*
e*(I+d*x+c)^2/(1+(d*x+c)^2)-c*f+d*e-I*(I+d*x+c)^2/(1+(d*x+c)^2)*f-I*f)/((I+
d*x+c)^2/(1+(d*x+c)^2)-1))^2-1/2*d*b^2/f*e/(-I*f+c*f-d*e)*polylog(3,(d*e+I*
f-c*f)/(-c*f+d*e-I*f)*(I+d*x+c)^2/(1+(d*x+c)^2))+I*a*b*ln(f*(d*x+c)-c*f+d*e
)/f*ln((I*f+f*(d*x+c))/(I*f+c*f-d*e))+I*b^2/f*Pi*arccot(d*x+c)^2*csgn(I*(c*
f*(I+d*x+c)^2/(1+(d*x+c)^2)-d*e*(I+d*x+c)^2/(1+(d*x+c)^2)-c*f+d*e-I*(I+d*x+
c)^2/(1+(d*x+c)^2)*f-I*f)/((I+d*x+c)^2/(1+(d*x+c)^2)-1))^2-I*b^2*c/(-I*f+c*
f-d*e)*arccot(d*x+c)*polylog(2,(d*e+I*f-c*f)/(-c*f+d*e-I*f)*(I+d*x+c)^2/(1+
(d*x+c)^2))-1/2*I*b^2/f*Pi*arccot(d*x+c)^2*csgn(I*(c*f*(I+d*x+c)^2/(1+(d*x+
c)^2)-d*e*(I+d*x+c)^2/(1+(d*x+c)^2)-c*f+d*e-I*(I+d*x+c)^2/(1+(d*x+c)^2)*f-I
*f)/((I+d*x+c)^2/(1+(d*x+c)^2)-1))^3-I*a*b*ln(f*(d*x+c)-c*f+d*e)/f*ln((I*f-
f*(d*x+c))/(d*e+I*f-c*f))
```

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

$$\frac{a^2 \log\left(fx+e\right)}{f} + \int \frac{12\,b^2 \arctan\left(1, dx+c\right)^2 + b^2 \log\left(d^2x^2 + 2\,cdx + c^2 + 1\right)^2 + 32\,ab \arctan\left(1, dx+c\right)}{16\left(fx+e\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] a^2*log(f*x + e)/f + integrate(1/16*(12*b^2*arctan2(1, d*x + c)^2 + b^2*log
(d^2*x^2 + 2*c*d*x + c^2 + 1)^2 + 32*a*b*arctan2(1, d*x + c))/(f*x + e), x)
```

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

$$\int \frac{(a + b\,\mathrm{acot}\,(c + d\,x))^2}{e + f\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Timed out
```

3.140 $\int \frac{\left(a+b\cot^{-1}(c+dx)\right)^2}{(e+fx)^2}\,dx$

Optimal. Leaf size=567

$$-\frac{2abd\log(e+fx)}{(de-cf)^2+f^2}+\frac{abd\log\left((c+dx)^2+1\right)}{(de-cf)^2+f^2}-\frac{2abd(de-cf)\tan^{-1}(c+dx)}{f\left((de-cf)^2+f^2\right)}-\frac{\left(a+b\cot^{-1}(c+dx)\right)^2}{f(e+fx)}+\frac{ib^2d\mathrm{Li}_2\left(1-\right.}{\left(c^2+1\right)f^2-}$$

```
[Out] I*b^2*d*arccot(d*x+c)^2/(d^2*e^2-2*c*d*e*f+(c^2+1)*f^2)+b^2*d*(-c*f+d*e)*ar
ccot(d*x+c)^2/f/(d^2*e^2-2*c*d*e*f+(c^2+1)*f^2)-(a+b*arccot(d*x+c))^2/f/(f*
x+e)-2*a*b*d*(-c*f+d*e)*arctan(d*x+c)/f/(f^2+(-c*f+d*e)^2)-2*a*b*d*ln(f*x+e
)/(f^2+(-c*f+d*e)^2)+2*b^2*d*arccot(d*x+c)*ln(2/(1-I*(d*x+c)))/(d^2*e^2-2*c
*d*e*f+(c^2+1)*f^2)-2*b^2*d*arccot(d*x+c)*ln(2*d*(f*x+e)/(d*e+I*f-c*f)/(1-I
*(d*x+c)))/(d^2*e^2-2*c*d*e*f+(c^2+1)*f^2)-2*b^2*d*arccot(d*x+c)*ln(2/(1+I*
(d*x+c)))/(d^2*e^2-2*c*d*e*f+(c^2+1)*f^2)+a*b*d*ln(1+(d*x+c)^2)/(f^2+(-c*f+
d*e)^2)+I*b^2*d*polylog(2,1-2/(1-I*(d*x+c)))/(d^2*e^2-2*c*d*e*f+(c^2+1)*f^2
)-I*b^2*d*polylog(2,1-2*d*(f*x+e)/(d*e+I*f-c*f)/(1-I*(d*x+c)))/(d^2*e^2-2*c
*d*e*f+(c^2+1)*f^2)+I*b^2*d*polylog(2,1-2/(1+I*(d*x+c)))/(d^2*e^2-2*c*d*e*f
+(c^2+1)*f^2)
```

Rubi [A] time = 1.39, antiderivative size = 567, normalized size of antiderivative = 1.00, number of steps used = 25, number of rules used = 25, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 1.250, Rules used = {5046, 1982, 705, 31, 634, 618, 204, 628, 6741, 5058, 706, 635, 203, 260, 6688, 12, 6725, 4857, 2402, 2315, 2447, 4985, 4885, 4921, 4855}

$$\frac{ib^2d\text{PolyLog}\left(2,1-\frac{2}{1-i(c+dx)}\right)}{\left(c^2+1\right)f^2-2cdef+d^2e^2}-\frac{ib^2d\text{PolyLog}\left(2,1-\frac{2d(e+fx)}{(1-i(c+dx))(de+(-c+i)f)}\right)}{\left(c^2+1\right)f^2-2cdef+d^2e^2}+\frac{ib^2d\text{PolyLog}\left(2,1-\frac{2}{1+i(c+dx)}\right)}{\left(c^2+1\right)f^2-2cdef+d^2e^2}-\frac{2abd\,\mathrm{l}}{(de-}$$

Antiderivative was successfully verified.

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

```
[Out] (I*b^2*d*ArcCot[c + d*x]^2)/(d^2*e^2 - 2*c*d*e*f + (1 + c^2)*f^2) + (b^2*d*
(d*e - c*f)*ArcCot[c + d*x]^2)/(f*(d^2*e^2 - 2*c*d*e*f + (1 + c^2)*f^2)) -
(a + b*ArcCot[c + d*x])^2/(f*(e + f*x)) - (2*a*b*d*(d*e - c*f)*ArcTan[c + d
*x])/(f*(f^2 + (d*e - c*f)^2)) - (2*a*b*d*Log[e + f*x])/(f^2 + (d*e - c*f)^
2) + (2*b^2*d*ArcCot[c + d*x]*Log[2/(1 - I*(c + d*x))])/(d^2*e^2 - 2*c*d*e*
f + (1 + c^2)*f^2) - (2*b^2*d*ArcCot[c + d*x]*Log[(2*d*(e + f*x))/((d*e + (
I - c)*f)*(1 - I*(c + d*x)))])/(d^2*e^2 - 2*c*d*e*f + (1 + c^2)*f^2) - (2*b
^2*d*ArcCot[c + d*x]*Log[2/(1 + I*(c + d*x))])/(d^2*e^2 - 2*c*d*e*f + (1 +
c^2)*f^2) + (a*b*d*Log[1 + (c + d*x)^2])/(f^2 + (d*e - c*f)^2) + (I*b^2*d*P
olyLog[2, 1 - 2/(1 - I*(c + d*x))])/(d^2*e^2 - 2*c*d*e*f + (1 + c^2)*f^2) -
 (I*b^2*d*PolyLog[2, 1 - (2*d*(e + f*x))/((d*e + (I - c)*f)*(1 - I*(c + d*x
)))])/(d^2*e^2 - 2*c*d*e*f + (1 + c^2)*f^2) + (I*b^2*d*PolyLog[2, 1 - 2/(1
+ I*(c + d*x))])/(d^2*e^2 - 2*c*d*e*f + (1 + c^2)*f^2)
```

Rule 12

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

Rule 31

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

Rule 203

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

Rule 204

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

Rule 260

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

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

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

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] &&  !NiceSqrtQ[b^2 - 4*a*c]
```

Rule 635

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> Dist[d, Int[1/(
a + c*x^2), x], x] + Dist[e, Int[x/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e
}, x] &&  !NiceSqrtQ[-(a*c)]
```

Rule 705

```
Int[1/(((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)), x_Symbol]
 :> Dist[e^2/(c*d^2 - b*d*e + a*e^2), Int[1/(d + e*x), x], x] + Dist[1/(c*d
^2 - b*d*e + a*e^2), Int[(c*d - b*e - c*e*x)/(a + b*x + c*x^2), x], x] /; F
reeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^
2, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 706

```
Int[1/(((d_) + (e_.)*(x_))*((a_) + (c_.)*(x_)^2)), x_Symbol] :> Dist[e^2/(c
*d^2 + a*e^2), Int[1/(d + e*x), x], x] + Dist[1/(c*d^2 + a*e^2), Int[(c*d -
 c*e*x)/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e}, x] && NeQ[c*d^2 + a*e^2,
 0]
```

Rule 1982

```
Int[(u_)^(m_.)*(v_)^(p_.), x_Symbol] :> Int[ExpandToSum[u, x]^m*ExpandToSum
[v, x]^p, x] /; FreeQ[{m, p}, x] && LinearQ[u, x] && QuadraticQ[v, x] &&  !
```

```
(LinearMatchQ[u, x] && QuadraticMatchQ[v, x])
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2402

```
Int[Log[(c_.)/((d_) + (e_.)*(x_))]/((f_) + (g_.)*(x_)^2), x_Symbol] :> -Dis
t[e/g, Subst[Int[Log[2*d*x]/(1 - 2*d*x), x], x, 1/(d + e*x)], x] /; FreeQ[{
c, d, e, f, g}, x] && EqQ[c, 2*d] && EqQ[e^2*f + d^2*g, 0]
```

Rule 2447

```
Int[Log[u_]*(Pq_)^(m_.), x_Symbol] :> With[{C = FullSimplify[(Pq^m*(1 - u))
/D[u, x]]}, Simp[C*PolyLog[2, 1 - u], x] /; FreeQ[C, x]] /; IntegerQ[m] &&
PolyQ[Pq, x] && RationalFunctionQ[u, x] && LeQ[RationalFunctionExponents[u,
 x][[2]], Expon[Pq, x]]
```

Rule 4855

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symbol]
 :> -Simp[((a + b*ArcCot[c*x])^p*Log[2/(1 + (e*x)/d)])/e, x] - Dist[(b*c*p)
/e, Int[((a + b*ArcCot[c*x])^(p - 1)*Log[2/(1 + (e*x)/d)])/(1 + c^2*x^2), x
], x] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[p, 0] && EqQ[c^2*d^2 + e^2, 0]
```

Rule 4857

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))/((d_) + (e_.)*(x_)), x_Symbol] :> -S
imp[((a + b*ArcCot[c*x])*Log[2/(1 - I*c*x)])/e, x] + (-Dist[(b*c)/e, Int[Lo
g[2/(1 - I*c*x)]/(1 + c^2*x^2), x], x] + Dist[(b*c)/e, Int[Log[(2*c*(d + e*
x))/((c*d + I*e)*(1 - I*c*x))]/(1 + c^2*x^2), x], x] + Simp[((a + b*ArcCot[
c*x])*Log[(2*c*(d + e*x))/((c*d + I*e)*(1 - I*c*x))])/e, x]) /; FreeQ[{a, b
, c, d, e}, x] && NeQ[c^2*d^2 + e^2, 0]
```

Rule 4885

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)^2), x_Symbo
l] :> -Simp[(a + b*ArcCot[c*x])^(p + 1)/(b*c*d*(p + 1)), x] /; FreeQ[{a, b,
 c, d, e, p}, x] && EqQ[e, c^2*d] && NeQ[p, -1]
```

Rule 4921

```
Int[(((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)*(x_))/((d_) + (e_.)*(x_)^2),
x_Symbol] :> Simp[(I*(a + b*ArcCot[c*x])^(p + 1))/(b*e*(p + 1)), x] - Dist[
1/(c*d), Int[(a + b*ArcCot[c*x])^p/(I - c*x), x], x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[e, c^2*d] && IGtQ[p, 0]
```

Rule 4985

```
Int[(((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)*((f_) + (g_.)*(x_))^(m_.))/((
d_) + (e_.)*(x_)^2), x_Symbol] :> Int[ExpandIntegrand[(a + b*ArcCot[c*x])^p
/(d + e*x^2), (f + g*x)^m, x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && IGt
Q[p, 0] && EqQ[e, c^2*d] && IGtQ[m, 0]
```

Rule 5046

```
Int[((a_.) + ArcCot[(c_) + (d_.)*(x_)]*(b_.))^(p_.)*((e_.) + (f_.)*(x_))^(m
_), x_Symbol] :> Simp[((e + f*x)^(m + 1)*(a + b*ArcCot[c + d*x])^p)/(f*(m +
 1)), x] + Dist[(b*d*p)/(f*(m + 1)), Int[((e + f*x)^(m + 1)*(a + b*ArcCot[c
 + d*x])^(p - 1))/(1 + (c + d*x)^2), x], x] /; FreeQ[{a, b, c, d, e, f}, x]
 && IGtQ[p, 0] && ILtQ[m, -1]
```

Rule 5058

```
Int[((a_.) + ArcCot[(c_) + (d_.)*(x_)]*(b_.))^(p_.)*((e_.) + (f_.)*(x_))^(m
_.)*((A_.) + (B_.)*(x_) + (C_.)*(x_)^2)^(q_.), x_Symbol] :> Dist[1/d, Subst
[Int[((d*e - c*f)/d + (f*x)/d)^m*(C/d^2 + (C*x^2)/d^2)^q*(a + b*ArcCot[x])^
p, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C, m, p, q}, x] &&
 EqQ[B*(1 + c^2) - 2*A*c*d, 0] && EqQ[2*c*C - B*d, 0]
```

Rule 6688

```
Int[u_, x_Symbol] :> With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; Simpl
erIntegrandQ[v, u, x]]
```

Rule 6725

```
Int[(u_)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> With[{v = RationalFunctionE
xpand[u/(a + b*x^n), x]}, Int[v, x] /; SumQ[v]] /; FreeQ[{a, b}, x] && IGtQ
[n, 0]
```

Rule 6741

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rubi steps

$$\int \frac{\left(a+b\cot^{-1}(c+dx)\right)^2}{(e+fx)^2}\,dx = -\frac{\left(a+b\cot^{-1}(c+dx)\right)^2}{f(e+fx)} - \frac{(2bd)\int \frac{a+b\cot^{-1}(c+dx)}{(e+fx)\left(1+(c+dx)^2\right)}\,dx}{f}$$

$$= -\frac{\left(a+b\cot^{-1}(c+dx)\right)^2}{f(e+fx)} - \frac{(2bd)\int \frac{a+b\cot^{-1}(c+dx)}{(e+fx)\left(1+c^2+2cdx+d^2x^2\right)}\,dx}{f}$$

$$= -\frac{\left(a+b\cot^{-1}(c+dx)\right)^2}{f(e+fx)} - \frac{(2b)\,\text{Subst}\left(\int \frac{a+b\cot^{-1}(x)}{\left(\frac{de-cf}{d}+\frac{fx}{d}\right)\left(1+x^2\right)}\,dx, x, c+dx\right)}{f}$$

$$= -\frac{\left(a+b\cot^{-1}(c+dx)\right)^2}{f(e+fx)} - \frac{(2b)\,\text{Subst}\left(\int \frac{d\left(a+b\cot^{-1}(x)\right)}{(de-cf+fx)\left(1+x^2\right)}\,dx, x, c+dx\right)}{f}$$

$$= -\frac{\left(a+b\cot^{-1}(c+dx)\right)^2}{f(e+fx)} - \frac{(2bd)\,\text{Subst}\left(\int \frac{a+b\cot^{-1}(x)}{(de-cf+fx)\left(1+x^2\right)}\,dx, x, c+dx\right)}{f}$$

$$= -\frac{\left(a+b\cot^{-1}(c+dx)\right)^2}{f(e+fx)} - \frac{(2bd)\,\text{Subst}\left(\int \left(\frac{a}{(de-cf+fx)\left(1+x^2\right)} + \frac{b\cot^{-1}(x)}{(de-cf+fx)\left(1+x^2\right)}\right) dx, x \ldots\right.}{f}$$

$$= -\frac{\left(a+b\cot^{-1}(c+dx)\right)^2}{f(e+fx)} - \frac{(2abd)\,\text{Subst}\left(\int \frac{1}{(de-cf+fx)\left(1+x^2\right)}\,dx, x, c+dx\right)}{f} - \frac{\left(2b^2d\right) \ldots}{\ldots}$$

$$= -\frac{\left(a+b\cot^{-1}(c+dx)\right)^2}{f(e+fx)} - \frac{\left(2b^2d\right)\text{Subst}\left(\int \left(\frac{f^2\cot^{-1}(x)}{\left(d^2e^2-2cdef+\left(1+c^2\right)f^2\right)(de-cf+fx)} + \frac{(de \ldots}{\left(d^2e^2-2 \ldots\right.}\right.\right.}{f}$$

$$= -\frac{\left(a+b\cot^{-1}(c+dx)\right)^2}{f(e+fx)} - \frac{2abd\log(e+fx)}{f^2+(de-cf)^2} - \frac{\left(2b^2d\right)\text{Subst}\left(\int \frac{(de-cf-fx)\cot^{-1}(x)}{1+x^2}\,dx \ldots\right.}{f\left(d^2e^2-2cdef+\left(1+c^2\right) \ldots\right.}$$

$$= -\frac{\left(a+b\cot^{-1}(c+dx)\right)^2}{f(e+fx)} - \frac{2abd(de-cf)\tan^{-1}(c+dx)}{f\left(f^2+(de-cf)^2\right)} - \frac{2abd\log(e+fx)}{f^2+(de-cf)^2} + \frac{2b^2 \ldots}{\ldots}$$

$$= -\frac{\left(a+b\cot^{-1}(c+dx)\right)^2}{f(e+fx)} - \frac{2abd(de-cf)\tan^{-1}(c+dx)}{f\left(f^2+(de-cf)^2\right)} - \frac{2abd\log(e+fx)}{f^2+(de-cf)^2} + \frac{2b^2 \ldots}{\ldots}$$

$$= \frac{ib^2d\cot^{-1}(c+dx)^2}{d^2e^2-2cdef+\left(1+c^2\right)f^2} + \frac{b^2d(de-cf)\cot^{-1}(c+dx)^2}{f\left(d^2e^2-2cdef+\left(1+c^2\right)f^2\right)} - \frac{\left(a+b\cot^{-1}(c+dx \ldots\right.}{f(e+fx)}$$

$$= \frac{ib^2d\cot^{-1}(c+dx)^2}{d^2e^2-2cdef+\left(1+c^2\right)f^2} + \frac{b^2d(de-cf)\cot^{-1}(c+dx)^2}{f\left(d^2e^2-2cdef+\left(1+c^2\right)f^2\right)} - \frac{\left(a+b\cot^{-1}(c+dx \ldots\right.}{f(e+fx)}$$

$$= \frac{ib^2d\cot^{-1}(c+dx)^2}{d^2e^2-2cdef+\left(1+c^2\right)f^2} + \frac{b^2d(de-cf)\cot^{-1}(c+dx)^2}{f\left(d^2e^2-2cdef+\left(1+c^2\right)f^2\right)} - \frac{\left(a+b\cot^{-1}(c+dx \ldots\right.}{f(e+fx)}$$

$$= \frac{ib^2d\cot^{-1}(c+dx)^2}{d^2e^2-2cdef+\left(1+c^2\right)f^2} + \frac{b^2d(de-cf)\cot^{-1}(c+dx)^2}{f\left(d^2e^2-2cdef+\left(1+c^2\right)f^2\right)} - \frac{\left(a+b\cot^{-1}(c+dx \ldots\right.}{f(e+fx)}$$

Mathematica [A] time = 9.50, size = 454, normalized size = 0.80

$$-\frac{a^2+\frac{2abf\left(\cot^{-1}(c+dx)\left(c^2f-cde+cdfx-d^2ex+f\right)+d(e+fx)\log\left(-\frac{d(e+fx)}{(c+dx)\sqrt{\frac{1}{(c+dx)^2}+1}}\right)\right)}{\left(c^2+1\right)f^2-2cdef+d^2e^2}+\frac{b^2d\left((c+dx)^2+1\right)(e+fx)\left(\frac{f\left(-i\text{Li}_2\left(\exp\left(2i\left(\cot^{-1}(c+dx)+\tan^{-1}\cdots\right.\right.\right.\right.}{\cdots}\right.}{\cdots}}{\cdots}$$

Warning: Unable to verify antiderivative.

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

```
[Out] -((a^2 + (2*a*b*f*((-(c*d*e) + f + c^2*f - d^2*e*x + c*d*f*x)*ArcCot[c + d*
x] + d*(e + f*x)*Log[-((d*(e + f*x))/((c + d*x)*Sqrt[1 + (c + d*x)^(-2)]))]
))/(d^2*e^2 - 2*c*d*e*f + (1 + c^2)*f^2) + (b^2*d*(e + f*x)*(1 + (c + d*x)^
2)*((E^(I*ArcTan[f/(d*e - c*f)])*ArcCot[c + d*x]^2)/((-(d*e) + c*f)*Sqrt[1
+ f^2/(d*e - c*f)^2]) + ArcCot[c + d*x]^2/(d*e + d*f*x) + (f*(I*Pi*ArcCot[c
 + d*x] + Pi*Log[1 + E^((-2*I)*ArcCot[c + d*x])] + 2*ArcCot[c + d*x]*Log[1
- E^((2*I)*(ArcCot[c + d*x] + ArcTan[f/(d*e - c*f)]))] - Pi*Log[1/Sqrt[1 +
(c + d*x)^(-2)]] + 2*ArcTan[f/(-(d*e) + c*f)]*(I*ArcCot[c + d*x] - Log[1 -
E^((2*I)*(ArcCot[c + d*x] + ArcTan[f/(d*e - c*f)]))] + Log[Sin[ArcCot[c + d
*x] + ArcTan[f/(d*e - c*f)]]]) - I*PolyLog[2, E^((2*I)*(ArcCot[c + d*x] + A
rcTan[f/(d*e - c*f)])))]))/(d^2*e^2 - 2*c*d*e*f + (1 + c^2)*f^2)))/((c + d*x
)^2*(1 + (c + d*x)^(-2))))/(f*(e + f*x)))
```

fricas [F] time = 0.83, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{b^2\operatorname{arccot}(dx+c)^2+2\,ab\operatorname{arccot}(dx+c)+a^2}{f^2x^2+2\,efx+e^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integral((b^2*arccot(d*x + c)^2 + 2*a*b*arccot(d*x + c) + a^2)/(f^2*x^2 + 2
*e*f*x + e^2), x)
```

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Timed out
```

maple [B] time = 0.13, size = 1180, normalized size = 2.08

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -d^2*b^2/f/(c^2*f^2-2*c*d*e*f+d^2*e^2+f^2)*arctan(d*x+c)^2*e-2*d*a*b/(d*f*x
+d*e)/f*arccot(d*x+c)+1/2*I*d*b^2/(c^2*f^2-2*c*d*e*f+d^2*e^2+f^2)*ln(d*x+c-
I)*ln(-1/2*I*(I+d*x+c))-1/2*I*d*b^2/(c^2*f^2-2*c*d*e*f+d^2*e^2+f^2)*ln(I+d*
x+c)*ln(1/2*I*(d*x+c-I))+2*d*a*b/(c^2*f^2-2*c*d*e*f+d^2*e^2+f^2)*arctan(d*x
```

```
+c)*c-I*d*b^2/(c^2*f^2-2*c*d*e*f+d^2*e^2+f^2)*ln(f*(d*x+c)-c*f+d*e)*ln((I*f
+f*(d*x+c))/(I*f+c*f-d*e))+1/2*I*d*b^2/(c^2*f^2-2*c*d*e*f+d^2*e^2+f^2)*ln(I
+d*x+c)*ln(1+(d*x+c)^2)-1/2*I*d*b^2/(c^2*f^2-2*c*d*e*f+d^2*e^2+f^2)*ln(d*x+
c-I)*ln(1+(d*x+c)^2)-2*d^2*a*b/f/(c^2*f^2-2*c*d*e*f+d^2*e^2+f^2)*arctan(d*x
+c)*e-d*a^2/(d*f*x+d*e)/f+d*a*b/(c^2*f^2-2*c*d*e*f+d^2*e^2+f^2)*ln(1+(d*x+c
)^2)-d*b^2/(d*f*x+d*e)/f*arccot(d*x+c)^2-2*d*b^2*arccot(d*x+c)/(c^2*f^2-2*c
*d*e*f+d^2*e^2+f^2)*ln(f*(d*x+c)-c*f+d*e)+d*b^2*arccot(d*x+c)/(c^2*f^2-2*c*
d*e*f+d^2*e^2+f^2)*ln(1+(d*x+c)^2)-1/2*I*d*b^2/(c^2*f^2-2*c*d*e*f+d^2*e^2+f
^2)*dilog(1/2*I*(d*x+c-I))+1/4*I*d*b^2/(c^2*f^2-2*c*d*e*f+d^2*e^2+f^2)*ln(d
*x+c-I)^2-I*d*b^2/(c^2*f^2-2*c*d*e*f+d^2*e^2+f^2)*dilog((I*f+f*(d*x+c))/(I*
f+c*f-d*e))-1/4*I*d*b^2/(c^2*f^2-2*c*d*e*f+d^2*e^2+f^2)*ln(I+d*x+c)^2+1/2*I
*d*b^2/(c^2*f^2-2*c*d*e*f+d^2*e^2+f^2)*dilog(-1/2*I*(I+d*x+c))+I*d*b^2/(c^2
*f^2-2*c*d*e*f+d^2*e^2+f^2)*dilog((I*f-f*(d*x+c))/(d*e+I*f-c*f))+d*b^2/(c^2
*f^2-2*c*d*e*f+d^2*e^2+f^2)*arctan(d*x+c)^2*c+I*d*b^2/(c^2*f^2-2*c*d*e*f+d^
2*e^2+f^2)*ln(f*(d*x+c)-c*f+d*e)*ln((I*f-f*(d*x+c))/(d*e+I*f-c*f))+2*d*b^2*
arccot(d*x+c)/(c^2*f^2-2*c*d*e*f+d^2*e^2+f^2)*arctan(d*x+c)*c-2*d^2*b^2/f*a
rccot(d*x+c)/(c^2*f^2-2*c*d*e*f+d^2*e^2+f^2)*arctan(d*x+c)*e-2*d*a*b/(c^2*f
^2-2*c*d*e*f+d^2*e^2+f^2)*ln(f*(d*x+c)-c*f+d*e)
```

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

$$-\left(d\left(\frac{2\left(d^2e-cdf\right)\arctan\left(\frac{d^2x+cd}{d}\right)}{\left(d^2e^2f-2\,cdef^2+\left(c^2+1\right)f^3\right)d}-\frac{\log\left(d^2x^2+2\,cdx+c^2+1\right)}{d^2e^2-2\,cdef+\left(c^2+1\right)f^2}+\frac{2\,\log\left(fx+e\right)}{d^2e^2-2\,cdef+\left(c^2+1\right)f^2}\right)+\frac{2\,\mathrm{arccot}\,(d}{f^2x+e}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] -(d*(2*(d^2*e - c*d*f)*arctan((d^2*x + c*d)/d)/((d^2*e^2*f - 2*c*d*e*f^2 +
(c^2 + 1)*f^3)*d) - log(d^2*x^2 + 2*c*d*x + c^2 + 1)/(d^2*e^2 - 2*c*d*e*f +
 (c^2 + 1)*f^2) + 2*log(f*x + e)/(d^2*e^2 - 2*c*d*e*f + (c^2 + 1)*f^2)) + 2
*arccot(d*x + c)/(f^2*x + e*f))*a*b - 1/16*(4*arctan2(1, d*x + c)^2 - 16*(f
^2*x + e*f)*integrate(1/16*(12*d^2*f*x^2*arctan2(1, d*x + c)^2 + 8*(3*c*arc
tan2(1, d*x + c)^2 - arctan2(1, d*x + c))*d*f*x - 8*d*e*arctan2(1, d*x + c)
 + (d^2*f*x^2 + 2*c*d*f*x + (c^2 + 1)*f)*log(d^2*x^2 + 2*c*d*x + c^2 + 1)^2
 + 12*(c^2*arctan2(1, d*x + c)^2 + arctan2(1, d*x + c)^2)*f - 4*(d^2*f*x^2
+ c*d*e + (d^2*e + c*d*f)*x)*log(d^2*x^2 + 2*c*d*x + c^2 + 1))/(d^2*f^3*x^4
 + (c^2 + 1)*e^2*f + 2*(d^2*e*f^2 + c*d*f^3)*x^3 + (d^2*e^2*f + 4*c*d*e*f^2
 + (c^2 + 1)*f^3)*x^2 + 2*(c*d*e^2*f + (c^2 + 1)*e*f^2)*x), x) - log(d^2*x^
2 + 2*c*d*x + c^2 + 1)^2)*b^2/(f^2*x + e*f) - a^2/(f^2*x + e*f)
```

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

$$\int \frac{{\left(a+b\,\mathrm{acot}\left(c+d\,x\right)\right)}^2}{{\left(e+f\,x\right)}^2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

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

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

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

Timed out

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] Timed out
```

3.141 $\int (e+fx)^2 \left(a+b\cot^{-1}(c+dx)\right)^3 \, dx$

Optimal. Leaf size=565

$$\frac{ib^2\left(-\left(1-3c^2\right)f^2-6cdef+3d^2e^2\right)\text{Li}_2\left(1-\frac{2}{i(c+dx)+1}\right)\left(a+b\cot^{-1}(c+dx)\right)}{d^3}-\frac{6b^2f(de-cf)\log\left(\frac{2}{1+i(c+dx)}\right)\left(a+\right.}{d^3}$$

```
[Out] a*b^2*f^2*x/d^2+b^3*f^2*(d*x+c)*arccot(d*x+c)/d^3+1/2*b*f^2*(a+b*arccot(d*x
+c))^2/d^3+3*I*b*f*(-c*f+d*e)*(a+b*arccot(d*x+c))^2/d^3+3*b*f*(-c*f+d*e)*(d
*x+c)*(a+b*arccot(d*x+c))^2/d^3+1/2*b*f^2*(d*x+c)^2*(a+b*arccot(d*x+c))^2/d
^3+1/3*I*(3*d^2*e^2-6*c*d*e*f-(-3*c^2+1)*f^2)*(a+b*arccot(d*x+c))^3/d^3-1/3
*(-c*f+d*e)*(d^2*e^2-2*c*d*e*f-(-c^2+3)*f^2)*(a+b*arccot(d*x+c))^3/d^3/f+1/
3*(f*x+e)^3*(a+b*arccot(d*x+c))^3/f-6*b^2*f*(-c*f+d*e)*(a+b*arccot(d*x+c))*
ln(2/(1+I*(d*x+c)))/d^3-b*(3*d^2*e^2-6*c*d*e*f-(-3*c^2+1)*f^2)*(a+b*arccot(
d*x+c))^2*ln(2/(1+I*(d*x+c)))/d^3+1/2*b^3*f^2*ln(1+(d*x+c)^2)/d^3+3*I*b^3*f
*(-c*f+d*e)*polylog(2,1-2/(1+I*(d*x+c)))/d^3+I*b^2*(3*d^2*e^2-6*c*d*e*f-(-3
*c^2+1)*f^2)*(a+b*arccot(d*x+c))*polylog(2,1-2/(1+I*(d*x+c)))/d^3-1/2*b^3*(
3*d^2*e^2-6*c*d*e*f-(-3*c^2+1)*f^2)*polylog(3,1-2/(1+I*(d*x+c)))/d^3
```

Rubi [A] time = 0.96, antiderivative size = 565, normalized size of antiderivative = 1.00, number of steps used = 21, number of rules used = 14, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.700$, Rules used = {5048, 4865, 4847, 4921, 4855, 2402, 2315, 4853, 4917, 260, 4885, 4985, 4995, 6610}

$$\frac{ib^2\left(-\left(1-3c^2\right)f^2-6cdef+3d^2e^2\right)\text{PolyLog}\left(2,1-\frac{2}{1+i(c+dx)}\right)\left(a+b\cot^{-1}(c+dx)\right)}{d^3}-\frac{b^3\left(-\left(1-3c^2\right)f^2-6cde\right.}{}$$

Antiderivative was successfully verified.

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

```
[Out] (a*b^2*f^2*x)/d^2 + (b^3*f^2*(c + d*x)*ArcCot[c + d*x])/d^3 + (b*f^2*(a + b
*ArcCot[c + d*x])^2)/(2*d^3) + ((3*I)*b*f*(d*e - c*f)*(a + b*ArcCot[c + d*x
])^2)/d^3 + (3*b*f*(d*e - c*f)*(c + d*x)*(a + b*ArcCot[c + d*x])^2)/d^3 + (
b*f^2*(c + d*x)^2*(a + b*ArcCot[c + d*x])^2)/(2*d^3) + ((I/3)*(3*d^2*e^2 -
6*c*d*e*f - (1 - 3*c^2)*f^2)*(a + b*ArcCot[c + d*x])^3)/d^3 - ((d*e - c*f)*
(d^2*e^2 - 2*c*d*e*f - (3 - c^2)*f^2)*(a + b*ArcCot[c + d*x])^3)/(3*d^3*f)
+ ((e + f*x)^3*(a + b*ArcCot[c + d*x])^3)/(3*f) - (6*b^2*f*(d*e - c*f)*(a +
 b*ArcCot[c + d*x])*Log[2/(1 + I*(c + d*x))])/d^3 - (b*(3*d^2*e^2 - 6*c*d*e
*f - (1 - 3*c^2)*f^2)*(a + b*ArcCot[c + d*x])^2*Log[2/(1 + I*(c + d*x))])/d
^3 + (b^3*f^2*Log[1 + (c + d*x)^2])/(2*d^3) + ((3*I)*b^3*f*(d*e - c*f)*Poly
Log[2, 1 - 2/(1 + I*(c + d*x))])/d^3 + (I*b^2*(3*d^2*e^2 - 6*c*d*e*f - (1 -
 3*c^2)*f^2)*(a + b*ArcCot[c + d*x])*PolyLog[2, 1 - 2/(1 + I*(c + d*x))])/d
^3 - (b^3*(3*d^2*e^2 - 6*c*d*e*f - (1 - 3*c^2)*f^2)*PolyLog[3, 1 - 2/(1 + I
*(c + d*x))])/(2*d^3)
```

Rule 260

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

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2402

```
Int[Log[(c_.)/((d_) + (e_.)*(x_))]/((f_) + (g_.)*(x_)^2), x_Symbol] :> -Dis
t[e/g, Subst[Int[Log[2*d*x]/(1 - 2*d*x), x], x, 1/(d + e*x)], x] /; FreeQ[{
c, d, e, f, g}, x] && EqQ[c, 2*d] && EqQ[e^2*f + d^2*g, 0]
```

Rule 4847

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b*Ar
cCot[c*x])^p, x] + Dist[b*c*p, Int[(x*(a + b*ArcCot[c*x])^(p - 1))/(1 + c^2
*x^2), x], x] /; FreeQ[{a, b, c}, x] && IGtQ[p, 0]
```

Rule 4853

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)*((d_.)*(x_))^(m_.), x_Symbol]
:> Simp[((d*x)^(m + 1)*(a + b*ArcCot[c*x])^p)/(d*(m + 1)), x] + Dist[(b*c*p
)/(d*(m + 1)), Int[((d*x)^(m + 1)*(a + b*ArcCot[c*x])^(p - 1))/(1 + c^2*x^2
), x], x] /; FreeQ[{a, b, c, d, m}, x] && IGtQ[p, 0] && (EqQ[p, 1] || Integ
erQ[m]) && NeQ[m, -1]
```

Rule 4855

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symbol]
 :> -Simp[((a + b*ArcCot[c*x])^p*Log[2/(1 + (e*x)/d)])/e, x] - Dist[(b*c*p)
/e, Int[((a + b*ArcCot[c*x])^(p - 1)*Log[2/(1 + (e*x)/d)])/(1 + c^2*x^2), x
], x] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[p, 0] && EqQ[c^2*d^2 + e^2, 0]
```

Rule 4865

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_)*((d_) + (e_.)*(x_))^(q_.), x_Sy
mbol] :> Simp[((d + e*x)^(q + 1)*(a + b*ArcCot[c*x])^p)/(e*(q + 1)), x] + D
ist[(b*c*p)/(e*(q + 1)), Int[ExpandIntegrand[(a + b*ArcCot[c*x])^(p - 1), (
d + e*x)^(q + 1)/(1 + c^2*x^2), x], x], x] /; FreeQ[{a, b, c, d, e}, x] &&
IGtQ[p, 1] && IntegerQ[q] && NeQ[q, -1]
```

Rule 4885

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)^2), x_Symbo
l] :> -Simp[(a + b*ArcCot[c*x])^(p + 1)/(b*c*d*(p + 1)), x] /; FreeQ[{a, b,
 c, d, e, p}, x] && EqQ[e, c^2*d] && NeQ[p, -1]
```

Rule 4917

```
Int[(((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)*((f_.)*(x_))^(m_))/((d_) + (e
_.)*(x_)^2), x_Symbol] :> Dist[f^2/e, Int[(f*x)^(m - 2)*(a + b*ArcCot[c*x])
^p, x], x] - Dist[(d*f^2)/e, Int[((f*x)^(m - 2)*(a + b*ArcCot[c*x])^p)/(d +
 e*x^2), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && GtQ[p, 0] && GtQ[m, 1]
```

Rule 4921

```
Int[(((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)*(x_))/((d_) + (e_.)*(x_)^2),
x_Symbol] :> Simp[(I*(a + b*ArcCot[c*x])^(p + 1))/(b*e*(p + 1)), x] - Dist[
1/(c*d), Int[(a + b*ArcCot[c*x])^p/(I - c*x), x], x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[e, c^2*d] && IGtQ[p, 0]
```

Rule 4985

```
Int[(((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)*((f_) + (g_.)*(x_))^(m_.))/((
d_) + (e_.)*(x_)^2), x_Symbol] :> Int[ExpandIntegrand[(a + b*ArcCot[c*x])^p
/(d + e*x^2), (f + g*x)^m, x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && IGt
```

```
Q[p, 0] && EqQ[e, c^2*d] && IGtQ[m, 0]
```

Rule 4995

```
Int[(Log[u_]*((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.))/((d_) + (e_.)*(x_)^2
), x_Symbol] :> -Simp[(I*(a + b*ArcCot[c*x])^p*PolyLog[2, 1 - u])/(2*c*d),
x] - Dist[(b*p*I)/2, Int[((a + b*ArcCot[c*x])^(p - 1)*PolyLog[2, 1 - u])/(d
 + e*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[p, 0] && EqQ[e, c^2*
d] && EqQ[(1 - u)^2 - (1 - (2*I)/(I - c*x))^2, 0]
```

Rule 5048

```
Int[((a_.) + ArcCot[(c_) + (d_.)*(x_)]*(b_.))^(p_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cCot[x])^p, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, p}, x] && IG
tQ[p, 0]
```

Rule 6610

```
Int[(u_)*PolyLog[n_, v_], x_Symbol] :> With[{w = DerivativeDivides[v, u*v,
x]}, Simp[w*PolyLog[n + 1, v], x] /; !FalseQ[w]] /; FreeQ[n, x]
```

Rubi steps

$$\int (e+fx)^2\left(a+b\cot^{-1}(c+dx)\right)^3\,dx = \frac{\text{Subst}\left(\int\left(\frac{de-cf}{d}+\frac{fx}{d}\right)^2\left(a+b\cot^{-1}(x)\right)^3\,dx,x,c+dx\right)}{d}$$

$$= \frac{(e+fx)^3\left(a+b\cot^{-1}(c+dx)\right)^3}{3f} + \frac{b\,\text{Subst}\left(\int\left(\frac{3f^2(de-cf)\left(a+b\cot^{-1}(x)\right)^2}{d^3} + \cdots\right.\right.}{\cdots}$$

$$= \frac{(e+fx)^3\left(a+b\cot^{-1}(c+dx)\right)^3}{3f} + \frac{b\,\text{Subst}\left(\int\frac{\left((de-cf)\left(d^2e^2-2cdef-3f^2+c^2f\cdots\right.\right.}{\cdots}\right.}{\cdots}$$

$$= \frac{3bf(de-cf)(c+dx)\left(a+b\cot^{-1}(c+dx)\right)^2}{d^3} + \frac{bf^2(c+dx)^2\left(a+b\cot\cdots\right.}{2d^3}$$

$$= \frac{3ibf(de-cf)\left(a+b\cot^{-1}(c+dx)\right)^2}{d^3} + \frac{3bf(de-cf)(c+dx)\left(a+b\cot\cdots\right.}{d^3}$$

$$= \frac{ab^2f^2x}{d^2} + \frac{bf^2\left(a+b\cot^{-1}(c+dx)\right)^2}{2d^3} + \frac{3ibf(de-cf)\left(a+b\cot^{-1}(c+\cdots\right.}{d^3}$$

$$= \frac{ab^2f^2x}{d^2} + \frac{b^3f^2(c+dx)\cot^{-1}(c+dx)}{d^3} + \frac{bf^2\left(a+b\cot^{-1}(c+dx)\right)^2}{2d^3} + \cdots$$

$$= \frac{ab^2f^2x}{d^2} + \frac{b^3f^2(c+dx)\cot^{-1}(c+dx)}{d^3} + \frac{bf^2\left(a+b\cot^{-1}(c+dx)\right)^2}{2d^3} + \cdots$$

$$= \frac{ab^2f^2x}{d^2} + \frac{b^3f^2(c+dx)\cot^{-1}(c+dx)}{d^3} + \frac{bf^2\left(a+b\cot^{-1}(c+dx)\right)^2}{2d^3} + \cdots$$

Mathematica [B] time = 11.43, size = 2336, normalized size = 4.13

Result too large to show

Warning: Unable to verify antiderivative.

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

```
[Out] (a^2*(a*d^2*e^2 + 3*b*d*e*f - 2*b*c*f^2)*x)/d^2 + (a^2*f*(2*a*d*e + b*f)*x^
2)/(2*d) + (a^3*f^2*x^3)/3 + a^2*b*x*(3*e^2 + 3*e*f*x + f^2*x^2)*ArcCot[c +
 d*x] + ((-3*a^2*b*c*d^2*e^2 - 3*a^2*b*d*e*f + 3*a^2*b*c^2*d*e*f + 3*a^2*b*
c*f^2 - a^2*b*c^3*f^2)*ArcTan[c + d*x])/d^3 + ((3*a^2*b*d^2*e^2 - 6*a^2*b*c
*d*e*f - a^2*b*f^2 + 3*a^2*b*c^2*f^2)*Log[1 + c^2 + 2*c*d*x + d^2*x^2])/(2*
d^3) + (a*b^2*f^2*x^2*(1 + (c + d*x)^2)*((c + d*x)*(1 - 6*c*ArcCot[c + d*x]
 + 3*ArcCot[c + d*x]^2 + 3*c^2*ArcCot[c + d*x]^2) - (c + d*x)*Sqrt[1 + (c +
 d*x)^(-2)]*(1 - 6*c*ArcCot[c + d*x] - ArcCot[c + d*x]^2 + 3*c^2*ArcCot[c +
 d*x]^2)*Cos[3*ArcCot[c + d*x]] - 2*(-2*ArcCot[c + d*x] + I*ArcCot[c + d*x]
^2 + 6*c*ArcCot[c + d*x]^2 - (3*I)*c^2*ArcCot[c + d*x]^2 + 2*(-1 + 3*c^2)*A
rcCot[c + d*x]*Log[1 - E^((2*I)*ArcCot[c + d*x])] - 6*c*Log[1/((c + d*x)*Sq
rt[1 + (c + d*x)^(-2)])] + Cos[2*ArcCot[c + d*x]]*(I*(-1 + 3*c^2)*ArcCot[c
+ d*x]^2 + (2 - 6*c^2)*ArcCot[c + d*x]*Log[1 - E^((2*I)*ArcCot[c + d*x])] +
 6*c*Log[1/((c + d*x)*Sqrt[1 + (c + d*x)^(-2)])])) + ((4*I)*(-1 + 3*c^2)*Po
lyLog[2, E^((2*I)*ArcCot[c + d*x])])/((c + d*x)^2*(1 + (c + d*x)^(-2)))))/(
4*d*(c + d*x)^2*(1 + (c + d*x)^(-2))*(1/Sqrt[1 + (c + d*x)^(-2)] - c/((c +
d*x)*Sqrt[1 + (c + d*x)^(-2)]))^2) - (3*a*b^2*e^2*(1 + (c + d*x)^2)*(-((c +
 d*x)*ArcCot[c + d*x]^2) + 2*ArcCot[c + d*x]*Log[1 - E^((2*I)*ArcCot[c + d*
x])] - I*(ArcCot[c + d*x]^2 + PolyLog[2, E^((2*I)*ArcCot[c + d*x])])))/(d*(
c + d*x)^2*(1 + (c + d*x)^(-2))) + (6*a*b^2*e*f*(1 + (c + d*x)^2)*(((c + d*
x)*ArcCot[c + d*x])/d^2 - (c*(c + d*x)*ArcCot[c + d*x]^2)/d^2 + ((c + d*x)^
2*(1 + (c + d*x)^(-2))*ArcCot[c + d*x]^2)/(2*d^2) - Log[1/((c + d*x)*Sqrt[1
 + (c + d*x)^(-2)])]/d^2 + (2*c*(ArcCot[c + d*x]*Log[1 - E^((2*I)*ArcCot[c
+ d*x])] - (I/2)*(ArcCot[c + d*x]^2 + PolyLog[2, E^((2*I)*ArcCot[c + d*x])]
)))/d^2))/((c + d*x)^2*(1 + (c + d*x)^(-2))) - (b^3*e^2*(1 + (c + d*x)^2)*(
(-1/8*I)*Pi^3 + I*ArcCot[c + d*x]^3 - (c + d*x)*ArcCot[c + d*x]^3 + 3*ArcCo
t[c + d*x]^2*Log[1 - E^((-2*I)*ArcCot[c + d*x])] + (3*I)*ArcCot[c + d*x]*Po
lyLog[2, E^((-2*I)*ArcCot[c + d*x])] + (3*PolyLog[3, E^((-2*I)*ArcCot[c + d
*x])])/2))/(d*(c + d*x)^2*(1 + (c + d*x)^(-2))) + (b^3*e*f*(1 + (c + d*x)^2
)*((-I)*c*Pi^3 + (12*I)*ArcCot[c + d*x]^2 + 12*(c + d*x)*ArcCot[c + d*x]^2
+ (8*I)*c*ArcCot[c + d*x]^3 - 8*c*(c + d*x)*ArcCot[c + d*x]^3 + 4*(c + d*x)
^2*(1 + (c + d*x)^(-2))*ArcCot[c + d*x]^3 + 24*c*ArcCot[c + d*x]^2*Log[1 -
E^((-2*I)*ArcCot[c + d*x])] - 24*ArcCot[c + d*x]*Log[1 - E^((2*I)*ArcCot[c
+ d*x])] + (24*I)*c*ArcCot[c + d*x]*PolyLog[2, E^((-2*I)*ArcCot[c + d*x])]
+ (12*I)*PolyLog[2, E^((2*I)*ArcCot[c + d*x])] + 12*c*PolyLog[3, E^((-2*I)*
ArcCot[c + d*x])]))/(4*d^2*(c + d*x)^2*(1 + (c + d*x)^(-2))) - (b^3*f^2*(1
+ (c + d*x)^2)*(I*(-1 + 3*c^2)*ArcCot[c + d*x]*PolyLog[2, E^((-2*I)*ArcCot[
c + d*x])] + ((c + d*x)^3*(1 + (c + d*x)^(-2))^(3/2)*(((3*I)*Pi^3)/((c + d*
x)*Sqrt[1 + (c + d*x)^(-2)]) - ((9*I)*c^2*Pi^3)/((c + d*x)*Sqrt[1 + (c + d*
x)^(-2)]) - (24*ArcCot[c + d*x])/Sqrt[1 + (c + d*x)^(-2)] + (72*c*ArcCot[c
+ d*x]^2)/Sqrt[1 + (c + d*x)^(-2)] - (48*ArcCot[c + d*x]^2)/((c + d*x)*Sqrt
[1 + (c + d*x)^(-2)]) + ((216*I)*c*ArcCot[c + d*x]^2)/((c + d*x)*Sqrt[1 + (
c + d*x)^(-2)]) - (24*ArcCot[c + d*x]^3)/Sqrt[1 + (c + d*x)^(-2)] - (24*c^2
*ArcCot[c + d*x]^3)/Sqrt[1 + (c + d*x)^(-2)] - ((24*I)*ArcCot[c + d*x]^3)/(
(c + d*x)*Sqrt[1 + (c + d*x)^(-2)]) + (96*c*ArcCot[c + d*x]^3)/((c + d*x)*S
qrt[1 + (c + d*x)^(-2)]) + ((72*I)*c^2*ArcCot[c + d*x]^3)/((c + d*x)*Sqrt[1
 + (c + d*x)^(-2)]) + 24*ArcCot[c + d*x]*Cos[3*ArcCot[c + d*x]] - 72*c*ArcC
ot[c + d*x]^2*Cos[3*ArcCot[c + d*x]] - 8*ArcCot[c + d*x]^3*Cos[3*ArcCot[c +
 d*x]] + 24*c^2*ArcCot[c + d*x]^3*Cos[3*ArcCot[c + d*x]] - (72*ArcCot[c + d
*x]^2*Log[1 - E^((-2*I)*ArcCot[c + d*x])])/((c + d*x)*Sqrt[1 + (c + d*x)^(-
2)]) + (216*c^2*ArcCot[c + d*x]^2*Log[1 - E^((-2*I)*ArcCot[c + d*x])])/((c
+ d*x)*Sqrt[1 + (c + d*x)^(-2)]) - (432*c*ArcCot[c + d*x]*Log[1 - E^((2*I)*
```

```
ArcCot[c + d*x])])/((c + d*x)*Sqrt[1 + (c + d*x)^(-2)]) + (72*Log[1/((c + d
*x)*Sqrt[1 + (c + d*x)^(-2)])])/((c + d*x)*Sqrt[1 + (c + d*x)^(-2)]) + ((28
8*I)*c*PolyLog[2, E^((2*I)*ArcCot[c + d*x])])/((c + d*x)^3*(1 + (c + d*x)^(
-2))^(3/2)) + (48*(-1 + 3*c^2)*PolyLog[3, E^((-2*I)*ArcCot[c + d*x])])/((c
+ d*x)^3*(1 + (c + d*x)^(-2))^(3/2)) - I*Pi^3*Sin[3*ArcCot[c + d*x]] + (3*I
)*c^2*Pi^3*Sin[3*ArcCot[c + d*x]] - (72*I)*c*ArcCot[c + d*x]^2*Sin[3*ArcCot
[c + d*x]] + (8*I)*ArcCot[c + d*x]^3*Sin[3*ArcCot[c + d*x]] - (24*I)*c^2*Ar
cCot[c + d*x]^3*Sin[3*ArcCot[c + d*x]] + 24*ArcCot[c + d*x]^2*Log[1 - E^((-
2*I)*ArcCot[c + d*x])]*Sin[3*ArcCot[c + d*x]] - 72*c^2*ArcCot[c + d*x]^2*Lo
g[1 - E^((-2*I)*ArcCot[c + d*x])]*Sin[3*ArcCot[c + d*x]] + 144*c*ArcCot[c +
 d*x]*Log[1 - E^((2*I)*ArcCot[c + d*x])]*Sin[3*ArcCot[c + d*x]] - 24*Log[1/
((c + d*x)*Sqrt[1 + (c + d*x)^(-2)])]*Sin[3*ArcCot[c + d*x]]))/96))/(d^3*(c
 + d*x)^2*(1 + (c + d*x)^(-2)))
```

fricas [F] time = 0.59, size = 0, normalized size = 0.00

$$\text{integral}\left(a^3 f^2 x^2 + 2\, a^3 e f x + a^3 e^2 + \left(b^3 f^2 x^2 + 2\, b^3 e f x + b^3 e^2\right) \operatorname{arccot}\left(dx + c\right)^3 + 3\left(a b^2 f^2 x^2 + 2\, a b^2 e f x + a b^2\right.$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integral(a^3*f^2*x^2 + 2*a^3*e*f*x + a^3*e^2 + (b^3*f^2*x^2 + 2*b^3*e*f*x +
 b^3*e^2)*arccot(d*x + c)^3 + 3*(a*b^2*f^2*x^2 + 2*a*b^2*e*f*x + a*b^2*e^2)
*arccot(d*x + c)^2 + 3*(a^2*b*f^2*x^2 + 2*a^2*b*e*f*x + a^2*b*e^2)*arccot(d
*x + c), x)
```

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

$$\int \left(fx + e\right)^2 \left(b \operatorname{arccot}\left(dx + c\right) + a\right)^3 dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate((f*x + e)^2*(b*arccot(d*x + c) + a)^3, x)
```

maple [B] time = 0.58, size = 3693, normalized size = 6.54

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 6/d^2*b^3*f*c*e*arccot(d*x+c)^2*ln(1+(I+d*x+c)/(1+(d*x+c)^2)^(1/2))+3/d^3*a
*b^2*f^2*arccot(d*x+c)*ln(1+(d*x+c)^2)*c^2-2/d^3*a*b^2*f^2*arccot(d*x+c)*ar
ctan(d*x+c)*c^3+6/d^3*a*b^2*f^2*arccot(d*x+c)*arctan(d*x+c)*c+3/2*I/d^3*a*b
^2*dilog(-1/2*I*(I+d*x+c))*c^2*f^2-3/4*I/d^3*a*b^2*ln(I+d*x+c)^2*c^2*f^2-2*
I/d^2*b^3*f*arccot(d*x+c)^3*c*e+3/4*I/d^3*a*b^2*ln(d*x+c-I)^2*c^2*f^2+a*b^2
*f^2*x/d^2+a^3*x*e^2+1/3*a^3*f^2*x^3-3*I/d^2*a*b^2*ln(I+d*x+c)*ln(1+(d*x+c)
^2)*c*e*f-3*I/d^2*a*b^2*ln(d*x+c-I)*ln(-1/2*I*(I+d*x+c))*c*e*f+3*I/d^2*a*b^
2*ln(I+d*x+c)*ln(1/2*I*(d*x+c-I))*c*e*f+3*I/d^2*a*b^2*ln(d*x+c-I)*ln(1+(d*x
+c)^2)*c*e*f-5/2/d^3*a^2*b*f^2*c^2+1/3*a^3/f*e^3+a^3*f*x^2*e+1/3*b^3*f^2*ar
ccot(d*x+c)^3*x^3+arccot(d*x+c)^3*x*b^3*e^2-1/d^3*b^3*f^2*ln(1+(I+d*x+c)/(1
+(d*x+c)^2)^(1/2))+2/d^3*b^3*f^2*ln((I+d*x+c)/(1+(d*x+c)^2)^(1/2))-1/d^3*b^
3*f^2*ln((I+d*x+c)/(1+(d*x+c)^2)^(1/2)-1)+1/2/d^3*b^3*f^2*arccot(d*x+c)^2+2
/d^3*b^3*f^2*polylog(3,(I+d*x+c)/(1+(d*x+c)^2)^(1/2))-1/2*I/d^3*a*b^2*ln(d*
x+c-I)*ln(-1/2*I*(I+d*x+c))*f^2-1/2*I/d^3*a*b^2*ln(I+d*x+c)*ln(1+(d*x+c)^2)
*f^2-3/2*I/d^3*a*b^2*dilog(1/2*I*(d*x+c-I))*c^2*f^2-3/d^2*a^2*b*f*ln(1+(d*x
+c)^2)*c*e+6/d^2*b^3*f*c*e*arccot(d*x+c)^2*ln(1-(I+d*x+c)/(1+(d*x+c)^2)^(1/
```

2))+1/2/d*a^2*b*f^2*x^2+a^2*b*f^2*arccot(d*x+c)*x^3+a*b^2*f^2*arccot(d*x+c)
^2*x^3+b^3*f*arccot(d*x+c)^3*e*x^2+3*arccot(d*x+c)^2*x*a*b^2*e^2+3*arccot(d
*x+c)*x*a^2*b*e^2+1/d^2*b^3*f*arccot(d*x+c)^3*e+I/d*b^3*arccot(d*x+c)^3*e^2
+3/2/d*a^2*b*ln(1+(d*x+c)^2)*e^2+1/d*arccot(d*x+c)^3*b^3*c*e^2-3/d*b^3*e^2*
arccot(d*x+c)^2*ln(1-(I+d*x+c)/(1+(d*x+c)^2)^(1/2))-3/d*b^3*e^2*arccot(d*x+
c)^2*ln(1+(I+d*x+c)/(1+(d*x+c)^2)^(1/2))+1/2/d*b^3*f^2*arccot(d*x+c)^2*x^2-
5/2/d^3*b^3*f^2*arccot(d*x+c)^2*c^2+a^2*b/f*arccot(d*x+c)*e^3+a^2*b/f*arcta
n(d*x+c)*e^3-1/3*I/d^3*b^3*f^2*arccot(d*x+c)^3-I/d^3*b^3*f^2*arccot(d*x+c)+
3/2*I/d*a*b^2*dilog(-1/2*I*(I+d*x+c))*e^2-3/4*I/d*a*b^2*ln(I+d*x+c)^2*e^2-3
/2*I/d*a*b^2*dilog(1/2*I*(d*x+c-I))*e^2+3/4*I/d*a*b^2*ln(d*x+c-I)^2*e^2+6*I
/d*b^3*e^2*arccot(d*x+c)*polylog(2,-(I+d*x+c)/(1+(d*x+c)^2)^(1/2))+6*I/d*b^
3*e^2*arccot(d*x+c)*polylog(2,(I+d*x+c)/(1+(d*x+c)^2)^(1/2))+6*I/d^2*b^3*f*
e*polylog(2,(I+d*x+c)/(1+(d*x+c)^2)^(1/2))+6*I/d^2*b^3*f*e*polylog(2,-(I+d*
x+c)/(1+(d*x+c)^2)^(1/2))-3*I/d^3*b^3*f^2*arccot(d*x+c)^2*c-6*I/d^3*b^3*f^2
*c*polylog(2,(I+d*x+c)/(1+(d*x+c)^2)^(1/2))-1/2*I/d^3*a*b^2*dilog(-1/2*I*(I
+d*x+c))*f^2+1/4*I/d^3*a*b^2*ln(I+d*x+c)^2*f^2+1/2*I/d^3*a*b^2*dilog(1/2*I*
(d*x+c-I))*f^2-3/d^3*a*b^2*f^2*ln(1+(d*x+c)^2)*c+12/d^2*b^3*f*c*e*polylog(3
,(I+d*x+c)/(1+(d*x+c)^2)^(1/2))+3/2/d^3*a^2*b*f^2*ln(1+(d*x+c)^2)*c^2-6/d^2
*b^3*f*e*arccot(d*x+c)*ln(1-(I+d*x+c)/(1+(d*x+c)^2)^(1/2))-3/d^3*b^3*f^2*c^
2*arccot(d*x+c)^2*ln(1-(I+d*x+c)/(1+(d*x+c)^2)^(1/2))-3/d^3*b^3*f^2*c^2*arc
cot(d*x+c)^2*ln(1+(I+d*x+c)/(1+(d*x+c)^2)^(1/2))+6/d^3*b^3*f^2*c*arccot(d*x
+c)*ln(1-(I+d*x+c)/(1+(d*x+c)^2)^(1/2))-6/d^2*a*b^2*f*arccot(d*x+c)*arctan(
d*x+c)*e-6/d*a*b^2*arccot(d*x+c)*arctan(d*x+c)*c*e^2+3/d^2*a*b^2*f*arctan(d
*x+c)^2*c^2*e+6*I/d^3*b^3*f^2*c^2*arccot(d*x+c)*polylog(2,-(I+d*x+c)/(1+(d*
x+c)^2)^(1/2))+6*I/d^3*b^3*f^2*c^2*arccot(d*x+c)*polylog(2,(I+d*x+c)/(1+(d*
x+c)^2)^(1/2))+1/2*I/d^3*a*b^2*ln(d*x+c-I)*ln(1+(d*x+c)^2)*f^2+I/d^3*b^3*f^
2*arccot(d*x+c)^3*c^2+3/d^2*a*b^2*f*ln(1+(d*x+c)^2)*e-1/d^3*a*b^2*f^2*arcta
n(d*x+c)^2*c^3+3/d^3*a*b^2*f^2*arctan(d*x+c)^2*c-3/d^2*a*b^2*f*arctan(d*x+c
)^2*e+3/d*a*b^2*arccot(d*x+c)*ln(1+(d*x+c)^2)*e^2-1/d^3*a*b^2*f^2*arccot(d*
x+c)*ln(1+(d*x+c)^2)+1/d*a*b^2*f^2*arccot(d*x+c)*x^2-5/d^3*a*b^2*f^2*arccot
(d*x+c)*c^2-2/d^2*b^3*f^2*arccot(d*x+c)^2*x*c-1/d^2*b^3*f*arccot(d*x+c)^3*e
*c^2+3/d*b^3*f*arccot(d*x+c)^2*e*x+3/d^2*b^3*f*arccot(d*x+c)^2*e*c+12/d^2*b
^3*f*c*e*polylog(3,-(I+d*x+c)/(1+(d*x+c)^2)^(1/2))-3/d*a*b^2*arctan(d*x+c)^
2*c*e^2+1/d^3*a*b^2*f^2*c-6/d^2*b^3*f*e*arccot(d*x+c)*ln(1+(I+d*x+c)/(1+(d*
x+c)^2)^(1/2))-1/d^3*a^2*b*f^2*arctan(d*x+c)*c^3+3/d^3*a^2*b*f^2*arctan(d*x
+c)*c-3/d^2*a^2*b*f*arctan(d*x+c)*e+3*a^2*b*f*arccot(d*x+c)*e*x^2+3*I/d^2*b
^3*f*arccot(d*x+c)^2*e-2*I/d^3*b^3*f^2*arccot(d*x+c)*polylog(2,-(I+d*x+c)/(
1+(d*x+c)^2)^(1/2))-2*I/d^3*b^3*f^2*arccot(d*x+c)*polylog(2,(I+d*x+c)/(1+(d
*x+c)^2)^(1/2))-1/4*I/d^3*a*b^2*ln(d*x+c-I)^2*f^2-6*I/d^3*b^3*f^2*c*polylog
(2,-(I+d*x+c)/(1+(d*x+c)^2)^(1/2))+3/d^2*a^2*b*f*c*e-2*a^2*b/d^2*x*c*f^2+3*
a^2*b/d*x*e*f-4/d^2*a*b^2*f^2*arccot(d*x+c)*x*c+3/d^2*a^2*b*f*arctan(d*x+c)
*c^2*e+1/2*I/d^3*a*b^2*ln(I+d*x+c)*ln(1/2*I*(d*x+c-I))*f^2+6/d^3*b^3*f^2*c*
arccot(d*x+c)*ln(1+(I+d*x+c)/(1+(d*x+c)^2)^(1/2))+2*a*b^2/f*arccot(d*x+c)*a
rctan(d*x+c)*e^3+3*a*b^2*f*arccot(d*x+c)^2*e*x^2-3/d*a^2*b*arctan(d*x+c)*c*
e^2+6/d*a*b^2*f*arccot(d*x+c)*e*x+6/d^2*a*b^2*f*arccot(d*x+c)*e*c+1/3/d^3*b
^3*f^2*arccot(d*x+c)^3*c^3-1/d^3*a*b^2*f^2*arctan(d*x+c)-1/2/d^3*a^2*b*f^2*
ln(1+(d*x+c)^2)-6/d^3*b^3*f^2*c^2*polylog(3,(I+d*x+c)/(1+(d*x+c)^2)^(1/2))-
6/d^3*b^3*f^2*c^2*polylog(3,-(I+d*x+c)/(1+(d*x+c)^2)^(1/2))-1/d^3*b^3*f^2*a
rccot(d*x+c)^3*c+1/d^3*b^3*f^2*arccot(d*x+c)^2*ln(1-(I+d*x+c)/(1+(d*x+c)^2)
^(1/2))+1/d^3*b^3*f^2*arccot(d*x+c)^2*ln(1+(I+d*x+c)/(1+(d*x+c)^2)^(1/2))+1
/d^2*b^3*f^2*arccot(d*x+c)*x+1/d^3*b^3*f^2*arccot(d*x+c)*c+a*b^2/f*arctan(d
*x+c)^2*e^3+a*b^2/f*arccot(d*x+c)^2*e^3-3/2*I/d*a*b^2*ln(d*x+c-I)*ln(1+(d*x
+c)^2)*e^2+3/2*I/d*a*b^2*ln(d*x+c-I)*ln(-1/2*I*(I+d*x+c))*e^2+3/2*I/d*a*b^2
*ln(I+d*x+c)*ln(1+(d*x+c)^2)*e^2-3/2*I/d*a*b^2*ln(I+d*x+c)*ln(1/2*I*(d*x+c-
I))*e^2+2/d^3*b^3*f^2*polylog(3,-(I+d*x+c)/(1+(d*x+c)^2)^(1/2))-6/d*b^3*e^2
*polylog(3,-(I+d*x+c)/(1+(d*x+c)^2)^(1/2))-6/d*b^3*e^2*polylog(3,(I+d*x+c)/
(1+(d*x+c)^2)^(1/2))+3*I/d^2*a*b^2*dilog(1/2*I*(d*x+c-I))*c*e*f+3/2*I/d^3*a
*b^2*ln(d*x+c-I)*ln(-1/2*I*(I+d*x+c))*c^2*f^2-3/2*I/d^3*a*b^2*ln(d*x+c-I)*l
n(1+(d*x+c)^2)*c^2*f^2-3/2*I/d^3*a*b^2*ln(I+d*x+c)*ln(1/2*I*(d*x+c-I))*c^2*

```
f^2+3/2*I/d^3*a*b^2*ln(I+d*x+c)*ln(1+(d*x+c)^2)*c^2*f^2-12*I/d^2*b^3*f*c*e*
arccot(d*x+c)*polylog(2,(I+d*x+c)/(1+(d*x+c)^2)^(1/2))-3/2*I/d^2*a*b^2*ln(d
*x+c-I)^2*c*e*f-3*I/d^2*a*b^2*dilog(-1/2*I*(I+d*x+c))*c*e*f+3/2*I/d^2*a*b^2
*ln(I+d*x+c)^2*c*e*f-12*I/d^2*b^3*f*c*e*arccot(d*x+c)*polylog(2,-(I+d*x+c)/
(1+(d*x+c)^2)^(1/2))+6/d^2*a*b^2*f*arccot(d*x+c)*arctan(d*x+c)*c^2*e-6/d^2*
a*b^2*f*arccot(d*x+c)*ln(1+(d*x+c)^2)*c*e
```

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

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] 1/24*b^3*f^2*x^3*arctan2(1, d*x + c)^3 + 1/8*b^3*e*f*x^2*arctan2(1, d*x + c
)^3 + 1/8*b^3*e^2*x*arctan2(1, d*x + c)^3 + 1/3*a^3*f^2*x^3 + a^3*e*f*x^2 +
 3*(x^2*arccot(d*x + c) + d*(x/d^2 + (c^2 - 1)*arctan((d^2*x + c*d)/d)/d^3
- c*log(d^2*x^2 + 2*c*d*x + c^2 + 1)/d^3))*a^2*b*e*f + 1/2*(2*x^3*arccot(d*
x + c) + d*((d*x^2 - 4*c*x)/d^3 - 2*(c^3 - 3*c)*arctan((d^2*x + c*d)/d)/d^4
 + (3*c^2 - 1)*log(d^2*x^2 + 2*c*d*x + c^2 + 1)/d^4))*a^2*b*f^2 + a^3*e^2*x
 + 3/2*(2*(d*x + c)*arccot(d*x + c) + log((d*x + c)^2 + 1))*a^2*b*e^2/d - 1
/32*(b^3*f^2*x^3*arctan2(1, d*x + c) + 3*b^3*e*f*x^2*arctan2(1, d*x + c) +
3*b^3*e^2*x*arctan2(1, d*x + c))*log(d^2*x^2 + 2*c*d*x + c^2 + 1)^2 + integ
rate(1/32*(4*(7*b^3*arctan2(1, d*x + c)^3 + 24*a*b^2*arctan2(1, d*x + c)^2)
*d^2*f^2*x^4 + 4*(2*(7*b^3*arctan2(1, d*x + c)^3 + 24*a*b^2*arctan2(1, d*x
+ c)^2)*d^2*e*f + (b^3*arctan2(1, d*x + c)^2 + 2*(7*b^3*arctan2(1, d*x + c)
^3 + 24*a*b^2*arctan2(1, d*x + c)^2)*c)*d*f^2)*x^3 + 4*(7*b^3*arctan2(1, d*
x + c)^3 + 24*a*b^2*arctan2(1, d*x + c)^2 + (7*b^3*arctan2(1, d*x + c)^3 +
24*a*b^2*arctan2(1, d*x + c)^2)*c^2)*e^2 + 4*((7*b^3*arctan2(1, d*x + c)^3
+ 24*a*b^2*arctan2(1, d*x + c)^2)*d^2*e^2 + (3*b^3*arctan2(1, d*x + c)^2 +
4*(7*b^3*arctan2(1, d*x + c)^3 + 24*a*b^2*arctan2(1, d*x + c)^2)*c)*d*e*f +
 (7*b^3*arctan2(1, d*x + c)^3 + 24*a*b^2*arctan2(1, d*x + c)^2 + (7*b^3*arc
tan2(1, d*x + c)^3 + 24*a*b^2*arctan2(1, d*x + c)^2)*c^2)*f^2)*x^2 + (3*b^3
*d^2*f^2*x^4*arctan2(1, d*x + c) + (6*b^3*d^2*e*f*arctan2(1, d*x + c) + (6*
b^3*c*arctan2(1, d*x + c) - b^3)*d*f^2)*x^3 + 3*(b^3*c^2*arctan2(1, d*x + c
) + b^3*arctan2(1, d*x + c))*e^2 + 3*(b^3*d^2*e^2*arctan2(1, d*x + c) + (4*
b^3*c*arctan2(1, d*x + c) - b^3)*d*e*f + (b^3*c^2*arctan2(1, d*x + c) + b^3
*arctan2(1, d*x + c))*f^2)*x^2 + 3*((2*b^3*c*arctan2(1, d*x + c) - b^3)*d*e
^2 + 2*(b^3*c^2*arctan2(1, d*x + c) + b^3*arctan2(1, d*x + c))*e*f)*x)*log(
d^2*x^2 + 2*c*d*x + c^2 + 1)^2 + 4*((3*b^3*arctan2(1, d*x + c)^2 + 2*(7*b^3
*arctan2(1, d*x + c)^3 + 24*a*b^2*arctan2(1, d*x + c)^2)*c)*d*e^2 + 2*(7*b^
3*arctan2(1, d*x + c)^3 + 24*a*b^2*arctan2(1, d*x + c)^2 + (7*b^3*arctan2(1
, d*x + c)^3 + 24*a*b^2*arctan2(1, d*x + c)^2)*c^2)*e*f)*x + 4*(b^3*d^2*f^2
*x^4*arctan2(1, d*x + c) + 3*b^3*c*d*e^2*x*arctan2(1, d*x + c) + (3*b^3*d^2
*e*f*arctan2(1, d*x + c) + b^3*c*d*f^2*arctan2(1, d*x + c))*x^3 + 3*(b^3*d^
2*e^2*arctan2(1, d*x + c) + b^3*c*d*e*f*arctan2(1, d*x + c))*x^2)*log(d^2*x
^2 + 2*c*d*x + c^2 + 1))/(d^2*x^2 + 2*c*d*x + c^2 + 1), x)
```

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

$$\int {\left(e+f\,x\right)}^2\,{\left(a+b\,\mathrm{acot}\left(c+d\,x\right)\right)}^3 \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] int((e + f*x)^2*(a + b*acot(c + d*x))^3, x)
```

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

$$\int \left(a + b \operatorname{acot}{\left(c + d x \right)}\right)^{3} \left(e + f x\right)^{2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**2*(a+b*acot(d*x+c))**3,x)
```

```
[Out] Integral((a + b*acot(c + d*x))**3*(e + f*x)**2, x)
```

3.142 $\int (e+fx)\left(a+b\cot^{-1}(c+dx)\right)^3\,dx$

Optimal. Leaf size=337

$$\frac{3ib^2(de-cf)\text{Li}_2\left(1-\frac{2}{i(c+dx)+1}\right)\left(a+b\cot^{-1}(c+dx)\right)}{d^2}-\frac{3b^2f\log\left(\frac{2}{1+i(c+dx)}\right)\left(a+b\cot^{-1}(c+dx)\right)}{d^2}+\frac{i(de-cf)\left(a\right.}{}$$

```
[Out] 3/2*I*b*f*(a+b*arccot(d*x+c))^2/d^2+3/2*b*f*(d*x+c)*(a+b*arccot(d*x+c))^2/d
^2+I*(-c*f+d*e)*(a+b*arccot(d*x+c))^3/d^2-1/2*(-c*f+d*e+f)*(d*e-(1+c)*f)*(a
+b*arccot(d*x+c))^3/d^2/f+1/2*(f*x+e)^2*(a+b*arccot(d*x+c))^3/f-3*b^2*f*(a+
b*arccot(d*x+c))*ln(2/(1+I*(d*x+c)))/d^2-3*b*(-c*f+d*e)*(a+b*arccot(d*x+c))
^2*ln(2/(1+I*(d*x+c)))/d^2+3/2*I*b^3*f*polylog(2,1-2/(1+I*(d*x+c)))/d^2+3*I
*b^2*(-c*f+d*e)*(a+b*arccot(d*x+c))*polylog(2,1-2/(1+I*(d*x+c)))/d^2-3/2*b^
3*(-c*f+d*e)*polylog(3,1-2/(1+I*(d*x+c)))/d^2
```

Rubi [A] time = 0.66, antiderivative size = 337, normalized size of antiderivative = 1.00, number of steps used = 15, number of rules used = 11, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.611, Rules used = {5048, 4865, 4847, 4921, 4855, 2402, 2315, 4985, 4885, 4995, 6610}

$$\frac{3ib^2(de-cf)\text{PolyLog}\left(2,1-\frac{2}{1+i(c+dx)}\right)\left(a+b\cot^{-1}(c+dx)\right)}{d^2}-\frac{3b^3(de-cf)\text{PolyLog}\left(3,1-\frac{2}{1+i(c+dx)}\right)}{2d^2}+\frac{3ib^3f\text{Po}}{}$$

Antiderivative was successfully verified.

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

```
[Out] (((3*I)/2)*b*f*(a + b*ArcCot[c + d*x])^2)/d^2 + (3*b*f*(c + d*x)*(a + b*Arc
Cot[c + d*x])^2)/(2*d^2) + (I*(d*e - c*f)*(a + b*ArcCot[c + d*x])^3)/d^2 -
((d*e + f - c*f)*(d*e - (1 + c)*f)*(a + b*ArcCot[c + d*x])^3)/(2*d^2*f) + (
(e + f*x)^2*(a + b*ArcCot[c + d*x])^3)/(2*f) - (3*b^2*f*(a + b*ArcCot[c + d
*x])*Log[2/(1 + I*(c + d*x))])/d^2 - (3*b*(d*e - c*f)*(a + b*ArcCot[c + d*x
])^2*Log[2/(1 + I*(c + d*x))])/d^2 + (((3*I)/2)*b^3*f*PolyLog[2, 1 - 2/(1 +
 I*(c + d*x))])/d^2 + ((3*I)*b^2*(d*e - c*f)*(a + b*ArcCot[c + d*x])*PolyLo
g[2, 1 - 2/(1 + I*(c + d*x))])/d^2 - (3*b^3*(d*e - c*f)*PolyLog[3, 1 - 2/(1
 + I*(c + d*x))])/(2*d^2)
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2402

```
Int[Log[(c_.)/((d_) + (e_.)*(x_))]/((f_) + (g_.)*(x_)^2), x_Symbol] :> -Dis
t[e/g, Subst[Int[Log[2*d*x]/(1 - 2*d*x), x], x, 1/(d + e*x)], x] /; FreeQ[{
c, d, e, f, g}, x] && EqQ[c, 2*d] && EqQ[e^2*f + d^2*g, 0]
```

Rule 4847

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b*Ar
cCot[c*x])^p, x] + Dist[b*c*p, Int[(x*(a + b*ArcCot[c*x])^(p - 1))/(1 + c^2
*x^2), x], x] /; FreeQ[{a, b, c}, x] && IGtQ[p, 0]
```

Rule 4855

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symbol]
 :> -Simp[((a + b*ArcCot[c*x])^p*Log[2/(1 + (e*x)/d)])/e, x] - Dist[(b*c*p)
/e, Int[((a + b*ArcCot[c*x])^(p - 1)*Log[2/(1 + (e*x)/d)])/(1 + c^2*x^2), x
```

```
], x] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[p, 0] && EqQ[c^2*d^2 + e^2, 0]
```

Rule 4865

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_)*((d_) + (e_.)*(x_))^(q_.), x_Sy
mbol] :> Simp[((d + e*x)^(q + 1)*(a + b*ArcCot[c*x])^p)/(e*(q + 1)), x] + D
ist[(b*c*p)/(e*(q + 1)), Int[ExpandIntegrand[(a + b*ArcCot[c*x])^(p - 1), (
d + e*x)^(q + 1)/(1 + c^2*x^2), x], x], x] /; FreeQ[{a, b, c, d, e}, x] &&
IGtQ[p, 1] && IntegerQ[q] && NeQ[q, -1]
```

Rule 4885

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)^2), x_Symbo
l] :> -Simp[(a + b*ArcCot[c*x])^(p + 1)/(b*c*d*(p + 1)), x] /; FreeQ[{a, b,
 c, d, e, p}, x] && EqQ[e, c^2*d] && NeQ[p, -1]
```

Rule 4921

```
Int[(((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)*(x_))/((d_) + (e_.)*(x_)^2),
x_Symbol] :> Simp[(I*(a + b*ArcCot[c*x])^(p + 1))/(b*e*(p + 1)), x] - Dist[
1/(c*d), Int[(a + b*ArcCot[c*x])^p/(I - c*x), x], x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[e, c^2*d] && IGtQ[p, 0]
```

Rule 4985

```
Int[(((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)*((f_) + (g_.)*(x_))^(m_.))/((
d_) + (e_.)*(x_)^2), x_Symbol] :> Int[ExpandIntegrand[(a + b*ArcCot[c*x])^p
/(d + e*x^2), (f + g*x)^m, x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && IGt
Q[p, 0] && EqQ[e, c^2*d] && IGtQ[m, 0]
```

Rule 4995

```
Int[(Log[u_]*((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.))/((d_) + (e_.)*(x_)^2
), x_Symbol] :> -Simp[(I*(a + b*ArcCot[c*x])^p*PolyLog[2, 1 - u])/(2*c*d),
x] - Dist[(b*p*I)/2, Int[((a + b*ArcCot[c*x])^(p - 1)*PolyLog[2, 1 - u])/(d
 + e*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[p, 0] && EqQ[e, c^2*
d] && EqQ[(1 - u)^2 - (1 - (2*I)/(I - c*x))^2, 0]
```

Rule 5048

```
Int[((a_.) + ArcCot[(c_) + (d_.)*(x_)]*(b_.))^(p_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cCot[x])^p, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, p}, x] && IG
tQ[p, 0]
```

Rule 6610

```
Int[(u_)*PolyLog[n_, v_], x_Symbol] :> With[{w = DerivativeDivides[v, u*v,
x]}, Simp[w*PolyLog[n + 1, v], x] /;  !FalseQ[w]] /; FreeQ[n, x]
```

Rubi steps

$$\int (e+fx)\left(a+b\cot^{-1}(c+dx)\right)^3 dx = \frac{\text{Subst}\left(\int \left(\frac{de-cf}{d}+\frac{fx}{d}\right)\left(a+b\cot^{-1}(x)\right)^3 dx, x, c+dx\right)}{d}$$

$$= \frac{(e+fx)^2\left(a+b\cot^{-1}(c+dx)\right)^3}{2f} + \frac{(3b)\,\text{Subst}\left(\int \left(\frac{f^2\left(a+b\cot^{-1}(x)\right)^2}{d^2} + \frac{((de-\cdots}{\cdots}\right.\right.}{\cdots}$$

$$= \frac{(e+fx)^2\left(a+b\cot^{-1}(c+dx)\right)^3}{2f} + \frac{(3b)\,\text{Subst}\left(\int \frac{((de-f-cf)(de+f-cf)+2f(d\cdots}{1+x^2}\right.}{2d^2 f\cdots}$$

$$= \frac{3bf(c+dx)\left(a+b\cot^{-1}(c+dx)\right)^2}{2d^2} + \frac{(e+fx)^2\left(a+b\cot^{-1}(c+dx)\right)^3}{2f} + \cdots$$

$$= \frac{3ibf\left(a+b\cot^{-1}(c+dx)\right)^2}{2d^2} + \frac{3bf(c+dx)\left(a+b\cot^{-1}(c+dx)\right)^2}{2d^2} + \frac{(e\cdots}{\cdots}$$

$$= \frac{3ibf\left(a+b\cot^{-1}(c+dx)\right)^2}{2d^2} + \frac{3bf(c+dx)\left(a+b\cot^{-1}(c+dx)\right)^2}{2d^2} + \frac{i(d\cdots}{\cdots}$$

$$= \frac{3ibf\left(a+b\cot^{-1}(c+dx)\right)^2}{2d^2} + \frac{3bf(c+dx)\left(a+b\cot^{-1}(c+dx)\right)^2}{2d^2} + \frac{i(d\cdots}{\cdots}$$

$$= \frac{3ibf\left(a+b\cot^{-1}(c+dx)\right)^2}{2d^2} + \frac{3bf(c+dx)\left(a+b\cot^{-1}(c+dx)\right)^2}{2d^2} + \frac{i(d\cdots}{\cdots}$$

$$= \frac{3ibf\left(a+b\cot^{-1}(c+dx)\right)^2}{2d^2} + \frac{3bf(c+dx)\left(a+b\cot^{-1}(c+dx)\right)^2}{2d^2} + \frac{i(d\cdots}{\cdots}$$

Mathematica [A] time = 1.27, size = 630, normalized size = 1.87

$$a^3 f(c+dx)^2 + a^2(c+dx)(-2acf+2ade+3bf) + 3a^2b(de-cf)\log\left((c+dx)^2+1\right) - 3a^2b(c+dx)\cot^{-1}(c+d\cdots$$

Warning: Unable to verify antiderivative.

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

```
[Out] (a^2*(2*a*d*e + 3*b*f - 2*a*c*f)*(c + d*x) + a^3*f*(c + d*x)^2 - 3*a^2*b*(c
 + d*x)*(c*f - d*(2*e + f*x))*ArcCot[c + d*x] - 3*a^2*b*f*ArcTan[c + d*x] +
 6*a*b^2*f*((c + d*x)*ArcCot[c + d*x] + ((1 + (c + d*x)^2)*ArcCot[c + d*x]^
2)/2 - Log[1/((c + d*x)*Sqrt[1 + (c + d*x)^(-2)])]) + 3*a^2*b*(d*e - c*f)*L
og[1 + (c + d*x)^2] + 6*a*b^2*d*e*(ArcCot[c + d*x]*((I + c + d*x)*ArcCot[c
+ d*x] - 2*Log[1 - E^((2*I)*ArcCot[c + d*x])]) + I*PolyLog[2, E^((2*I)*ArcC
ot[c + d*x])]) - 6*a*b^2*c*f*(ArcCot[c + d*x]*((I + c + d*x)*ArcCot[c + d*x
] - 2*Log[1 - E^((2*I)*ArcCot[c + d*x])]) + I*PolyLog[2, E^((2*I)*ArcCot[c
+ d*x])]) + b^3*f*(3*(c + d*x)*ArcCot[c + d*x]^2 + (1 + (c + d*x)^2)*ArcCot
[c + d*x]^3 - 6*ArcCot[c + d*x]*Log[1 - E^((2*I)*ArcCot[c + d*x])] + (3*I)*
(ArcCot[c + d*x]^2 + PolyLog[2, E^((2*I)*ArcCot[c + d*x])])) + 2*b^3*d*e*((
I/8)*Pi^3 - I*ArcCot[c + d*x]^3 + (c + d*x)*ArcCot[c + d*x]^3 - 3*ArcCot[c
```

```
+ d*x]^2*Log[1 - E^((-2*I)*ArcCot[c + d*x])] - (3*I)*ArcCot[c + d*x]*PolyLo
g[2, E^((-2*I)*ArcCot[c + d*x])] - (3*PolyLog[3, E^((-2*I)*ArcCot[c + d*x])
])/2) - 2*b^3*c*f*((I/8)*Pi^3 - I*ArcCot[c + d*x]^3 + (c + d*x)*ArcCot[c +
d*x]^3 - 3*ArcCot[c + d*x]^2*Log[1 - E^((-2*I)*ArcCot[c + d*x])] - (3*I)*Ar
cCot[c + d*x]*PolyLog[2, E^((-2*I)*ArcCot[c + d*x])] - (3*PolyLog[3, E^((-2
*I)*ArcCot[c + d*x])])/2))/(2*d^2)
```

fricas [F] time = 0.59, size = 0, normalized size = 0.00

$$\text{integral}\left(a^3fx + a^3e + \left(b^3fx + b^3e\right)\text{arccot}\left(dx + c\right)^3 + 3\left(ab^2fx + ab^2e\right)\text{arccot}\left(dx + c\right)^2 + 3\left(a^2bfx + a^2be\right)\text{arcc}$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integral(a^3*f*x + a^3*e + (b^3*f*x + b^3*e)*arccot(d*x + c)^3 + 3*(a*b^2*f
*x + a*b^2*e)*arccot(d*x + c)^2 + 3*(a^2*b*f*x + a^2*b*e)*arccot(d*x + c),
x)
```

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

$$\int \left(fx + e\right)\left(b\,\text{arccot}\left(dx + c\right) + a\right)^3 dx$$

Verification of antiderivative is not currently implemented for this CAS.

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

```
[Out] integrate((f*x + e)*(b*arccot(d*x + c) + a)^3, x)
```

maple [B] time = 1.20, size = 1570, normalized size = 4.66

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)*(a+b*arccot(d*x+c))^3,x)
```

```
[Out] -3/2*I/d^2*a*b^2*ln(I+d*x+c)*ln(1+(d*x+c)^2)*c*f+3/2*I/d^2*a*b^2*ln(I+d*x+c
)*ln(1/2*I*(d*x+c-I))*c*f+3/2*I/d^2*a*b^2*ln(d*x+c-I)*ln(1+(d*x+c)^2)*c*f-3
/2*I/d^2*a*b^2*ln(d*x+c-I)*ln(-1/2*I*(I+d*x+c))*c*f-6*I/d^2*b^3*c*f*arccot(
d*x+c)*polylog(2,(I+d*x+c)/(1+(d*x+c)^2)^(1/2))+1/2*a^3*x^2*f+a^3*x*e+1/d*a
rccot(d*x+c)^3*b^3*c*e-3/d^2*b^3*f*arccot(d*x+c)*ln(1+(I+d*x+c)/(1+(d*x+c)^
2)^(1/2))+I/d*b^3*arccot(d*x+c)^3*e+3/2/d^2*a*b^2*f*ln(1+(d*x+c)^2)-3/2/d^2
*a*b^2*f*arctan(d*x+c)^2+3/2*I/d^2*b^3*arccot(d*x+c)^2*f-3/2*I/d^2*a*b^2*di
log(-1/2*I*(I+d*x+c))*c*f+3/4*I/d^2*a*b^2*ln(I+d*x+c)^2*c*f+3/2*I/d^2*a*b^2
*dilog(1/2*I*(d*x+c-I))*c*f-3/2*I/d*a*b^2*ln(I+d*x+c)*ln(1/2*I*(d*x+c-I))*e
-3/2*I/d*a*b^2*ln(d*x+c-I)*ln(1+(d*x+c)^2)*e+3/2*I/d*a*b^2*ln(d*x+c-I)*ln(-
1/2*I*(I+d*x+c))*e+3/2*I/d*a*b^2*ln(I+d*x+c)*ln(1+(d*x+c)^2)*e-6*I/d^2*b^3*
c*f*arccot(d*x+c)*polylog(2,-(I+d*x+c)/(1+(d*x+c)^2)^(1/2))-3/d^2*a*b^2*arc
cot(d*x+c)*ln(1+(d*x+c)^2)*c*f-3/4*I/d^2*a*b^2*ln(d*x+c-I)^2*c*f-6/d*b^3*e*
polylog(3,(I+d*x+c)/(1+(d*x+c)^2)^(1/2))+1/2/d^2*b^3*arccot(d*x+c)^3*f-3/d*
b^3*e*arccot(d*x+c)^2*ln(1-(I+d*x+c)/(1+(d*x+c)^2)^(1/2))+3/2/d^2*a^2*b*c*f
+3*I/d^2*b^3*f*polylog(2,-(I+d*x+c)/(1+(d*x+c)^2)^(1/2))+3*I/d^2*b^3*f*poly
log(2,(I+d*x+c)/(1+(d*x+c)^2)^(1/2))+3/2*a^2*b/d*f*x+3/2*a*b^2*arccot(d*x+c
)^2*f*x^2+3/2*a^2*b*arccot(d*x+c)*f*x^2+3*arccot(d*x+c)^2*x*a*b^2*e+3*arcco
t(d*x+c)*x*a^2*b*e+6/d^2*b^3*c*f*polylog(3,(I+d*x+c)/(1+(d*x+c)^2)^(1/2))+6
/d^2*b^3*c*f*polylog(3,-(I+d*x+c)/(1+(d*x+c)^2)^(1/2))-3/d^2*b^3*f*arccot(d
*x+c)*ln(1-(I+d*x+c)/(1+(d*x+c)^2)^(1/2))+3/2/d*b^3*arccot(d*x+c)^2*f*x+3/2
/d^2*b^3*arccot(d*x+c)^2*f*c-1/2/d^2*b^3*arccot(d*x+c)^3*f*c^2-3/2/d^2*a^2*
b*f*arctan(d*x+c)+3/2/d*a^2*b*ln(1+(d*x+c)^2)*e-3/d*b^3*e*arccot(d*x+c)^2*l
n(1+(I+d*x+c)/(1+(d*x+c)^2)^(1/2))-1/2/d^2*a^3*f*c^2+1/d*a^3*c*e+1/2*b^3*ar
```

```
ccot(d*x+c)^3*f*x^2+arccot(d*x+c)^3*x*b^3*e-6/d*b^3*e*polylog(3,-(I+d*x+c)/
(1+(d*x+c)^2)^(1/2))+3/d^2*a*b^2*arccot(d*x+c)*f*c-3/2/d^2*a*b^2*arccot(d*x
+c)^2*c^2*f-3/d^2*a*b^2*arccot(d*x+c)*arctan(d*x+c)*f+3/d^2*b^3*c*f*arccot(
d*x+c)^2*ln(1-(I+d*x+c)/(1+(d*x+c)^2)^(1/2))+3/d^2*b^3*c*f*arccot(d*x+c)^2*
ln(1+(I+d*x+c)/(1+(d*x+c)^2)^(1/2))-3/2/d^2*a^2*b*arccot(d*x+c)*c^2*f+3/d*a
*b^2*arccot(d*x+c)*f*x-3/2/d^2*a^2*b*ln(1+(d*x+c)^2)*c*f+3/d*a*b^2*arccot(d
*x+c)*ln(1+(d*x+c)^2)*e+3/d*arccot(d*x+c)^2*a*b^2*c*e+3/d*arccot(d*x+c)*a^2
*b*c*e+3/2*I/d*a*b^2*dilog(-1/2*I*(I+d*x+c))*e+3/4*I/d*a*b^2*ln(d*x+c-I)^2*
e-I/d^2*b^3*arccot(d*x+c)^3*c*f+6*I/d*b^3*e*arccot(d*x+c)*polylog(2,-(I+d*x
+c)/(1+(d*x+c)^2)^(1/2))+6*I/d*b^3*e*arccot(d*x+c)*polylog(2,(I+d*x+c)/(1+(
d*x+c)^2)^(1/2))-3/4*I/d*a*b^2*ln(I+d*x+c)^2*e-3/2*I/d*a*b^2*dilog(1/2*I*(d
*x+c-I))*e
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{16}\,b^3fx^2\arctan\left(1,dx+c\right)^3+\frac{1}{8}\,b^3ex\arctan\left(1,dx+c\right)^3+\frac{1}{2}\,a^3fx^2+\frac{3}{2}\left(x^2\operatorname{arccot}\left(dx+c\right)+d\left(\frac{x}{d^2}+\frac{\left(c^2-1\right)\operatorname{arct}}{d}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*(a+b*arccot(d*x+c))^3,x, algorithm="maxima")
```

```
[Out] 1/16*b^3*f*x^2*arctan2(1, d*x + c)^3 + 1/8*b^3*e*x*arctan2(1, d*x + c)^3 +
1/2*a^3*f*x^2 + 3/2*(x^2*arccot(d*x + c) + d*(x/d^2 + (c^2 - 1)*arctan((d^2
*x + c*d)/d)/d^3 - c*log(d^2*x^2 + 2*c*d*x + c^2 + 1)/d^3))*a^2*b*f + a^3*e
*x + 3/2*(2*(d*x + c)*arccot(d*x + c) + log((d*x + c)^2 + 1))*a^2*b*e/d - 3
/64*(b^3*f*x^2*arctan2(1, d*x + c) + 2*b^3*e*x*arctan2(1, d*x + c))*log(d^2
*x^2 + 2*c*d*x + c^2 + 1)^2 + integrate(1/64*(8*(7*b^3*arctan2(1, d*x + c)^
3 + 24*a*b^2*arctan2(1, d*x + c)^2)*d^2*f*x^3 + 4*(2*(7*b^3*arctan2(1, d*x
+ c)^3 + 24*a*b^2*arctan2(1, d*x + c)^2)*d^2*e + (3*b^3*arctan2(1, d*x + c)
^2 + 4*(7*b^3*arctan2(1, d*x + c)^3 + 24*a*b^2*arctan2(1, d*x + c)^2)*c)*d*
f)*x^2 + 3*(2*b^3*d^2*f*x^3*arctan2(1, d*x + c) + (2*b^3*d^2*e*arctan2(1, d
*x + c) + (4*b^3*c*arctan2(1, d*x + c) - b^3)*d*f)*x^2 + 2*(b^3*c^2*arctan2
(1, d*x + c) + b^3*arctan2(1, d*x + c))*e + 2*((2*b^3*c*arctan2(1, d*x + c)
 - b^3)*d*e + (b^3*c^2*arctan2(1, d*x + c) + b^3*arctan2(1, d*x + c))*f)*x)
*log(d^2*x^2 + 2*c*d*x + c^2 + 1)^2 + 8*(7*b^3*arctan2(1, d*x + c)^3 + 24*a
*b^2*arctan2(1, d*x + c)^2 + (7*b^3*arctan2(1, d*x + c)^3 + 24*a*b^2*arctan
2(1, d*x + c)^2)*c^2)*e + 8*((3*b^3*arctan2(1, d*x + c)^2 + 2*(7*b^3*arctan
2(1, d*x + c)^3 + 24*a*b^2*arctan2(1, d*x + c)^2)*c)*d*e + (7*b^3*arctan2(1
, d*x + c)^3 + 24*a*b^2*arctan2(1, d*x + c)^2 + (7*b^3*arctan2(1, d*x + c)^
3 + 24*a*b^2*arctan2(1, d*x + c)^2)*c^2)*f)*x + 12*(b^3*d^2*f*x^3*arctan2(1
, d*x + c) + 2*b^3*c*d*e*x*arctan2(1, d*x + c) + (2*b^3*d^2*e*arctan2(1, d*
x + c) + b^3*c*d*f*arctan2(1, d*x + c))*x^2)*log(d^2*x^2 + 2*c*d*x + c^2 +
1))/(d^2*x^2 + 2*c*d*x + c^2 + 1), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \left(e+f\,x\right)\,{\left(a+b\,\mathrm{acot}\left(c+d\,x\right)\right)}^3 \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e + f*x)*(a + b*acot(c + d*x))^3,x)
```

```
[Out] int((e + f*x)*(a + b*acot(c + d*x))^3, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(a+b\operatorname{acot}{\left(c+dx\right)}\right)^{3}\left(e+fx\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*(a+b*acot(d*x+c))**3,x)
[Out] Integral((a + b*acot(c + d*x))**3*(e + f*x), x)
```

3.143 $\int \left(a+b\cot^{-1}(c+dx)\right)^3\,dx$

Optimal. Leaf size=143

$$\frac{3ib^2\text{Li}_2\left(1-\frac{2}{i(c+dx)+1}\right)\left(a+b\cot^{-1}(c+dx)\right)}{d}+\frac{(c+dx)\left(a+b\cot^{-1}(c+dx)\right)^3}{d}+\frac{i\left(a+b\cot^{-1}(c+dx)\right)^3}{d}-\frac{3b\log(}{}$$

```
[Out] I*(a+b*arccot(d*x+c))^3/d+(d*x+c)*(a+b*arccot(d*x+c))^3/d-3*b*(a+b*arccot(d
*x+c))^2*ln(2/(1+I*(d*x+c)))/d+3*I*b^2*(a+b*arccot(d*x+c))*polylog(2,1-2/(1
+I*(d*x+c)))/d-3/2*b^3*polylog(3,1-2/(1+I*(d*x+c)))/d
```

Rubi [A] time = 0.22, antiderivative size = 143, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 7, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.583, Rules used = {5040, 4847, 4921, 4855, 4885, 4995, 6610}

$$\frac{3ib^2\text{PolyLog}\left(2,1-\frac{2}{1+i(c+dx)}\right)\left(a+b\cot^{-1}(c+dx)\right)}{d}-\frac{3b^3\text{PolyLog}\left(3,1-\frac{2}{1+i(c+dx)}\right)}{2d}+\frac{(c+dx)\left(a+b\cot^{-1}(c+\right.}{d}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcCot[c + d*x])^3,x]
```

```
[Out] (I*(a + b*ArcCot[c + d*x])^3)/d + ((c + d*x)*(a + b*ArcCot[c + d*x])^3)/d -
 (3*b*(a + b*ArcCot[c + d*x])^2*Log[2/(1 + I*(c + d*x))])/d + ((3*I)*b^2*(a
 + b*ArcCot[c + d*x])*PolyLog[2, 1 - 2/(1 + I*(c + d*x))])/d - (3*b^3*PolyL
og[3, 1 - 2/(1 + I*(c + d*x))])/(2*d)
```

Rule 4847

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b*Ar
cCot[c*x])^p, x] + Dist[b*c*p, Int[(x*(a + b*ArcCot[c*x])^(p - 1))/(1 + c^2
*x^2), x], x] /; FreeQ[{a, b, c}, x] && IGtQ[p, 0]
```

Rule 4855

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symbol]
 :> -Simp[((a + b*ArcCot[c*x])^p*Log[2/(1 + (e*x)/d)])/e, x] - Dist[(b*c*p)
/e, Int[((a + b*ArcCot[c*x])^(p - 1)*Log[2/(1 + (e*x)/d)])/(1 + c^2*x^2), x
], x] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[p, 0] && EqQ[c^2*d^2 + e^2, 0]
```

Rule 4885

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)^2), x_Symbo
l] :> -Simp[(a + b*ArcCot[c*x])^(p + 1)/(b*c*d*(p + 1)), x] /; FreeQ[{a, b,
 c, d, e, p}, x] && EqQ[e, c^2*d] && NeQ[p, -1]
```

Rule 4921

```
Int[(((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)*(x_))/((d_) + (e_.)*(x_)^2),
x_Symbol] :> Simp[(I*(a + b*ArcCot[c*x])^(p + 1))/(b*e*(p + 1)), x] - Dist[
1/(c*d), Int[(a + b*ArcCot[c*x])^p/(I - c*x), x], x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[e, c^2*d] && IGtQ[p, 0]
```

Rule 4995

```
Int[(Log[u_]*((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.))/((d_) + (e_.)*(x_)^2
), x_Symbol] :> -Simp[(I*(a + b*ArcCot[c*x])^p*PolyLog[2, 1 - u])/(2*c*d),
x] - Dist[(b*p*I)/2, Int[((a + b*ArcCot[c*x])^(p - 1)*PolyLog[2, 1 - u])/(d
 + e*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[p, 0] && EqQ[e, c^2*
```

```
d] && EqQ[(1 - u)^2 - (1 - (2*I)/(I - c*x))^2, 0]
```

Rule 5040

```
Int[((a_.) + ArcCot[(c_) + (d_.)*(x_)]*(b_.))^(p_.), x_Symbol] :> Dist[1/d,
 Subst[Int[(a + b*ArcCot[x])^p, x], x, c + d*x], x] /; FreeQ[{a, b, c, d},
x] && IGtQ[p, 0]
```

Rule 6610

```
Int[(u_)*PolyLog[n_, v_], x_Symbol] :> With[{w = DerivativeDivides[v, u*v,
x]}, Simp[w*PolyLog[n + 1, v], x] /;  !FalseQ[w]] /; FreeQ[n, x]
```

Rubi steps

$$\int \left(a+b\cot^{-1}(c+dx)\right)^3\,dx=\frac{\text{Subst}\left(\int \left(a+b\cot^{-1}(x)\right)^3\,dx,x,c+dx\right)}{d}$$

$$=\frac{(c+dx)\left(a+b\cot^{-1}(c+dx)\right)^3}{d}+\frac{(3b)\,\text{Subst}\left(\int \frac{x\left(a+b\cot^{-1}(x)\right)^2}{1+x^2}\,dx,x,c+dx\right)}{d}$$

$$=\frac{i\left(a+b\cot^{-1}(c+dx)\right)^3}{d}+\frac{(c+dx)\left(a+b\cot^{-1}(c+dx)\right)^3}{d}-\frac{(3b)\,\text{Subst}\left(\int \frac{\left(a+b\cot^{-1}\right.}{i-x}\right.}{d}$$

$$=\frac{i\left(a+b\cot^{-1}(c+dx)\right)^3}{d}+\frac{(c+dx)\left(a+b\cot^{-1}(c+dx)\right)^3}{d}-\frac{3b\left(a+b\cot^{-1}(c+dx\right.}{d}$$

$$=\frac{i\left(a+b\cot^{-1}(c+dx)\right)^3}{d}+\frac{(c+dx)\left(a+b\cot^{-1}(c+dx)\right)^3}{d}-\frac{3b\left(a+b\cot^{-1}(c+dx\right.}{d}$$

$$=\frac{i\left(a+b\cot^{-1}(c+dx)\right)^3}{d}+\frac{(c+dx)\left(a+b\cot^{-1}(c+dx)\right)^3}{d}-\frac{3b\left(a+b\cot^{-1}(c+dx\right.}{d}$$

Mathematica [A] time = 0.35, size = 228, normalized size = 1.59

$$2a^3(c+dx)+3a^2b\log\left((c+dx)^2+1\right)+6a^2b(c+dx)\cot^{-1}(c+dx)+6ab^2\left(i\text{Li}_2\left(e^{2i\cot^{-1}(c+dx)}\right)+\cot^{-1}(c+dx)\left((\right.\right.$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + b*ArcCot[c + d*x])^3,x]
```

```
[Out] (2*a^3*(c + d*x) + 6*a^2*b*(c + d*x)*ArcCot[c + d*x] + 3*a^2*b*Log[1 + (c +
 d*x)^2] + 6*a*b^2*(ArcCot[c + d*x]*((I + c + d*x)*ArcCot[c + d*x] - 2*Log[
1 - E^((2*I)*ArcCot[c + d*x])]) + I*PolyLog[2, E^((2*I)*ArcCot[c + d*x])])
+ 2*b^3*((I/8)*Pi^3 - I*ArcCot[c + d*x]^3 + (c + d*x)*ArcCot[c + d*x]^3 - 3
*ArcCot[c + d*x]^2*Log[1 - E^((-2*I)*ArcCot[c + d*x])] - (3*I)*ArcCot[c + d
*x]*PolyLog[2, E^((-2*I)*ArcCot[c + d*x])] - (3*PolyLog[3, E^((-2*I)*ArcCot
[c + d*x])])/2))/(2*d)
```

fricas [F] time = 0.73, size = 0, normalized size = 0.00

$$\text{integral}\left(b^3\,\text{arccot}\,(dx+c)^3+3\,ab^2\,\text{arccot}\,(dx+c)^2+3\,a^2b\,\text{arccot}\,(dx+c)+a^3,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arccot(d*x+c))^3,x, algorithm="fricas")
```

```
[Out] integral(b^3*arccot(d*x + c)^3 + 3*a*b^2*arccot(d*x + c)^2 + 3*a^2*b*arccot
(d*x + c) + a^3, x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (b \operatorname{arccot}(dx+c)+a)^3 \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arccot(d*x+c))^3,x, algorithm="giac")
```

```
[Out] integrate((b*arccot(d*x + c) + a)^3, x)
```

maple [B] time = 0.45, size = 507, normalized size = 3.55

$$x a^3+\frac{a^3 c}{d}+\frac{i \operatorname{arccot}(dx+c)^3 b^3}{d}+\operatorname{arccot}(dx+c)^3 x b^3+\frac{\operatorname{arccot}(dx+c)^3 b^3 c}{d}+\frac{3 i \operatorname{arccot}(dx+c)^2 a b^2}{d}-\frac{3 \ln \left(1- \right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arccot(d*x+c))^3,x)
```

```
[Out] x*a^3+1/d*a^3*c+I/d*arccot(d*x+c)^3*b^3+arccot(d*x+c)^3*x*b^3+1/d*arccot(d*
x+c)^3*b^3*c+6*I/d*polylog(2,-(I+d*x+c)/(1+(d*x+c)^2)^(1/2))*arccot(d*x+c)*
b^3-3/d*ln(1-(I+d*x+c)/(1+(d*x+c)^2)^(1/2))*arccot(d*x+c)^2*b^3+6*I/d*polyl
og(2,(I+d*x+c)/(1+(d*x+c)^2)^(1/2))*arccot(d*x+c)*b^3-3/d*ln(1+(I+d*x+c)/(1
+(d*x+c)^2)^(1/2))*arccot(d*x+c)^2*b^3-6/d*polylog(3,(I+d*x+c)/(1+(d*x+c)^2
)^(1/2))*b^3-6/d*polylog(3,-(I+d*x+c)/(1+(d*x+c)^2)^(1/2))*b^3+6*I/d*polylo
g(2,(I+d*x+c)/(1+(d*x+c)^2)^(1/2))*a*b^2+3*arccot(d*x+c)^2*x*a*b^2+3/d*arcc
ot(d*x+c)^2*a*b^2*c+6*I/d*polylog(2,-(I+d*x+c)/(1+(d*x+c)^2)^(1/2))*a*b^2-6
/d*ln(1-(I+d*x+c)/(1+(d*x+c)^2)^(1/2))*arccot(d*x+c)*a*b^2+3*I/d*arccot(d*x
+c)^2*a*b^2-6/d*ln(1+(I+d*x+c)/(1+(d*x+c)^2)^(1/2))*arccot(d*x+c)*a*b^2+3*a
rccot(d*x+c)*x*a^2*b+3/d*arccot(d*x+c)*a^2*b*c+3/2/d*a^2*b*ln(1+(d*x+c)^2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{8} b^3 x \arctan(1, dx+c)^3-\frac{3}{32} b^3 x \arctan(1, dx+c) \log\left(d^2 x^2+2 cdx+c^2+1\right)^2+a^3 x+\frac{3 \left(2 (dx+c) \operatorname{arccot}(dx \right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arccot(d*x+c))^3,x, algorithm="maxima")
```

```
[Out] 1/8*b^3*x*arctan2(1, d*x + c)^3 - 3/32*b^3*x*arctan2(1, d*x + c)*log(d^2*x^
2 + 2*c*d*x + c^2 + 1)^2 + a^3*x + 3/2*(2*(d*x + c)*arccot(d*x + c) + log((
d*x + c)^2 + 1))*a^2*b/d + integrate(1/32*(28*b^3*arctan2(1, d*x + c)^3 + 4
*(7*b^3*arctan2(1, d*x + c)^3 + 24*a*b^2*arctan2(1, d*x + c)^2)*d^2*x^2 + 9
6*a*b^2*arctan2(1, d*x + c)^2 + 4*(7*b^3*arctan2(1, d*x + c)^3 + 24*a*b^2*a
rctan2(1, d*x + c)^2)*c^2 + 4*(3*b^3*arctan2(1, d*x + c)^2 + 2*(7*b^3*arcta
n2(1, d*x + c)^3 + 24*a*b^2*arctan2(1, d*x + c)^2)*c)*d*x + 3*(b^3*d^2*x^2*
arctan2(1, d*x + c) + b^3*c^2*arctan2(1, d*x + c) + b^3*arctan2(1, d*x + c)
 + (2*b^3*c*arctan2(1, d*x + c) - b^3)*d*x)*log(d^2*x^2 + 2*c*d*x + c^2 + 1
)^2 + 12*(b^3*d^2*x^2*arctan2(1, d*x + c) + b^3*c*d*x*arctan2(1, d*x + c))*
log(d^2*x^2 + 2*c*d*x + c^2 + 1))/(d^2*x^2 + 2*c*d*x + c^2 + 1), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int (a + b\,\mathrm{acot}\,(c + d\,x))^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*acot(c + d*x))^3,x)
[Out] int((a + b*acot(c + d*x))^3, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (a + b\,\mathrm{acot}\,(c + dx))^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*acot(d*x+c))**3,x)
[Out] Integral((a + b*acot(c + d*x))**3, x)
```

3.144 $\int \frac{\left(a+b\cot^{-1}(c+dx)\right)^3}{e+fx}\,dx$

Optimal. Leaf size=372

$$\frac{3b^2\left(a+b\cot^{-1}(c+dx)\right)\mathrm{Li}_3\left(1-\frac{2d(e+fx)}{(de-cf+if)(1-i(c+dx))}\right)}{2f}-\frac{3b^2\mathrm{Li}_3\left(1-\frac{2}{1-i(c+dx)}\right)\left(a+b\cot^{-1}(c+dx)\right)}{2f}+\frac{3ib\left(a+b\,\mathrm{c}\right.}{}$$

```
[Out] -(a+b*arccot(d*x+c))^3*ln(2/(1-I*(d*x+c)))/f+(a+b*arccot(d*x+c))^3*ln(2*d*(
f*x+e)/(d*e+I*f-c*f)/(1-I*(d*x+c)))/f-3/2*I*b*(a+b*arccot(d*x+c))^2*polylog
(2,1-2/(1-I*(d*x+c)))/f+3/2*I*b*(a+b*arccot(d*x+c))^2*polylog(2,1-2*d*(f*x+
e)/(d*e+I*f-c*f)/(1-I*(d*x+c)))/f-3/2*b^2*(a+b*arccot(d*x+c))*polylog(3,1-2
/(1-I*(d*x+c)))/f+3/2*b^2*(a+b*arccot(d*x+c))*polylog(3,1-2*d*(f*x+e)/(d*e+
I*f-c*f)/(1-I*(d*x+c)))/f+3/4*I*b^3*polylog(4,1-2/(1-I*(d*x+c)))/f-3/4*I*b^
3*polylog(4,1-2*d*(f*x+e)/(d*e+I*f-c*f)/(1-I*(d*x+c)))/f
```

Rubi [A] time = 0.22, antiderivative size = 372, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.100, Rules used = {5048, 4861}

$$\frac{3b^2\left(a+b\cot^{-1}(c+dx)\right)\mathrm{PolyLog}\left(3,1-\frac{2d(e+fx)}{(1-i(c+dx))(-cf+de+if)}\right)}{2f}-\frac{3b^2\mathrm{PolyLog}\left(3,1-\frac{2}{1-i(c+dx)}\right)\left(a+b\cot^{-1}(c+\right.}{2f}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcCot[c + d*x])^3/(e + f*x),x]
```

```
[Out] -(((a + b*ArcCot[c + d*x])^3*Log[2/(1 - I*(c + d*x))])/f) + ((a + b*ArcCot[
c + d*x])^3*Log[(2*d*(e + f*x))/((d*e + I*f - c*f)*(1 - I*(c + d*x)))])/f -
 (((3*I)/2)*b*(a + b*ArcCot[c + d*x])^2*PolyLog[2, 1 - 2/(1 - I*(c + d*x))]
)/f + (((3*I)/2)*b*(a + b*ArcCot[c + d*x])^2*PolyLog[2, 1 - (2*d*(e + f*x))
/((d*e + I*f - c*f)*(1 - I*(c + d*x)))])/f - (3*b^2*(a + b*ArcCot[c + d*x])
*PolyLog[3, 1 - 2/(1 - I*(c + d*x))])/(2*f) + (3*b^2*(a + b*ArcCot[c + d*x]
)*PolyLog[3, 1 - (2*d*(e + f*x))/((d*e + I*f - c*f)*(1 - I*(c + d*x)))])/(2
*f) + (((3*I)/4)*b^3*PolyLog[4, 1 - 2/(1 - I*(c + d*x))])/f - (((3*I)/4)*b^
3*PolyLog[4, 1 - (2*d*(e + f*x))/((d*e + I*f - c*f)*(1 - I*(c + d*x)))])/f
```

Rule 4861

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^3/((d_) + (e_.)*(x_)), x_Symbol] :>
-Simp[((a + b*ArcCot[c*x])^3*Log[2/(1 - I*c*x)])/e, x] + (Simp[((a + b*ArcC
ot[c*x])^3*Log[(2*c*(d + e*x))/((c*d + I*e)*(1 - I*c*x))])/e, x] - Simp[(3*
I*b*(a + b*ArcCot[c*x])^2*PolyLog[2, 1 - 2/(1 - I*c*x)])/(2*e), x] + Simp[(
3*I*b*(a + b*ArcCot[c*x])^2*PolyLog[2, 1 - (2*c*(d + e*x))/((c*d + I*e)*(1
- I*c*x))])/(2*e), x] - Simp[(3*b^2*(a + b*ArcCot[c*x])*PolyLog[3, 1 - 2/(1
 - I*c*x)])/(2*e), x] + Simp[(3*b^2*(a + b*ArcCot[c*x])*PolyLog[3, 1 - (2*c
*(d + e*x))/((c*d + I*e)*(1 - I*c*x))])/(2*e), x] + Simp[(3*I*b^3*PolyLog[4
, 1 - 2/(1 - I*c*x)])/(4*e), x] - Simp[(3*I*b^3*PolyLog[4, 1 - (2*c*(d + e*
x))/((c*d + I*e)*(1 - I*c*x))])/(4*e), x]) /; FreeQ[{a, b, c, d, e}, x] &&
NeQ[c^2*d^2 + e^2, 0]
```

Rule 5048

```
Int[((a_.) + ArcCot[(c_) + (d_.)*(x_)]*(b_.))^(p_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cCot[x])^p, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, p}, x] && IG
tQ[p, 0]
```

Rubi steps

$$\int \frac{\left(a+b\cot^{-1}(c+dx)\right)^3}{e+fx}\,dx = \frac{\text{Subst}\left(\int \frac{\left(a+b\cot^{-1}(x)\right)^3}{\frac{de-cf}{d}+\frac{fx}{d}}\,dx,x,c+dx\right)}{d}$$
$$= -\frac{\left(a+b\cot^{-1}(c+dx)\right)^3\log\left(\frac{2}{1-i(c+dx)}\right)}{f} + \frac{\left(a+b\cot^{-1}(c+dx)\right)^3\log\left(\frac{2d(e+fx)}{(de+if-cf)(1-i(c}\right.}{f}$$

Mathematica [F] time = 45.86, size = 0, normalized size = 0.00

$$\int \frac{\left(a+b\cot^{-1}(c+dx)\right)^3}{e+fx}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(a + b*ArcCot[c + d*x])^3/(e + f*x),x]
[Out] Integrate[(a + b*ArcCot[c + d*x])^3/(e + f*x), x]
```

fricas [F] time = 0.48, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{b^3\,\text{arccot}\,(dx+c)^3+3\,ab^2\,\text{arccot}\,(dx+c)^2+3\,a^2b\,\text{arccot}\,(dx+c)+a^3}{fx+e},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arccot(d*x+c))^3/(f*x+e),x, algorithm="fricas")
[Out] integral((b^3*arccot(d*x + c)^3 + 3*a*b^2*arccot(d*x + c)^2 + 3*a^2*b*arcco
t(d*x + c) + a^3)/(f*x + e), x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arccot(d*x+c))^3/(f*x+e),x, algorithm="giac")
[Out] Timed out
```

maple [C] time = 1.05, size = 4521, normalized size = 12.15

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arccot(d*x+c))^3/(f*x+e),x)
[Out] b^3*c/(-I*f+c*f-d*e)*arccot(d*x+c)^3*ln(1-(d*e+I*f-c*f)/(-c*f+d*e-I*f)*(I+d
*x+c)^2/(1+(d*x+c)^2))+3*a*b^2*ln(f*(d*x+c)-c*f+d*e)/f*arccot(d*x+c)^2+3*a*
b^2/f*arccot(d*x+c)^2*ln((I+d*x+c)^2/(1+(d*x+c)^2)-1)-3*a*b^2/(-I*f+c*f-d*e
)*arccot(d*x+c)*polylog(2,(d*e+I*f-c*f)/(-c*f+d*e-I*f)*(I+d*x+c)^2/(1+(d*x+
c)^2))-3*d*a*b^2/f*e/(-I*f+c*f-d*e)*arccot(d*x+c)^2*ln(1-(d*e+I*f-c*f)/(-c*
f+d*e-I*f)*(I+d*x+c)^2/(1+(d*x+c)^2))+3*I*d*b^3/f*e*arccot(d*x+c)^2*polylog
(2,(d*e+I*f-c*f)/(-c*f+d*e-I*f)*(I+d*x+c)^2/(1+(d*x+c)^2))/(-2*I*f+2*c*f-2*
d*e)+1/2*I*b^3/f*Pi*arccot(d*x+c)^3*csgn(I/((I+d*x+c)^2/(1+(d*x+c)^2)-1))*c
sgn(I*(c*f*(I+d*x+c)^2/(1+(d*x+c)^2)-d*e*(I+d*x+c)^2/(1+(d*x+c)^2)-c*f+d*e-
```

```
I*(I+d*x+c)^2/(1+(d*x+c)^2)*f-I*f))*csgn(I*(c*f*(I+d*x+c)^2/(1+(d*x+c)^2)-d
*e*(I+d*x+c)^2/(1+(d*x+c)^2)-c*f+d*e-I*(I+d*x+c)^2/(1+(d*x+c)^2)*f-I*f)/((I
+d*x+c)^2/(1+(d*x+c)^2)-1))-3/2*I*a*b^2/f*Pi*arccot(d*x+c)^2*csgn(I*(c*f*(I
+d*x+c)^2/(1+(d*x+c)^2)-d*e*(I+d*x+c)^2/(1+(d*x+c)^2)-c*f+d*e-I*(I+d*x+c)^2
/(1+(d*x+c)^2)*f-I*f))*csgn(I*(c*f*(I+d*x+c)^2/(1+(d*x+c)^2)-d*e*(I+d*x+c)^
2/(1+(d*x+c)^2)-c*f+d*e-I*(I+d*x+c)^2/(1+(d*x+c)^2)*f-I*f)/((I+d*x+c)^2/(1+
(d*x+c)^2)-1))^2-3/2*I*a*b^2/f*Pi*arccot(d*x+c)^2*csgn(I/((I+d*x+c)^2/(1+(d
*x+c)^2)-1))*csgn(I*(c*f*(I+d*x+c)^2/(1+(d*x+c)^2)-d*e*(I+d*x+c)^2/(1+(d*x+
c)^2)-c*f+d*e-I*(I+d*x+c)^2/(1+(d*x+c)^2)*f-I*f)/((I+d*x+c)^2/(1+(d*x+c)^2)
-1))^2+a^3*ln(f*(d*x+c)-c*f+d*e)/f-3*a*b^2/f*arccot(d*x+c)^2*ln(c*f*(I+d*x+
c)^2/(1+(d*x+c)^2)-d*e*(I+d*x+c)^2/(1+(d*x+c)^2)-c*f+d*e-I*(I+d*x+c)^2/(1+(
d*x+c)^2)*f-I*f)-3*a*b^2/f*arccot(d*x+c)^2*ln(1+(I+d*x+c)/(1+(d*x+c)^2)^(1/
2))-3*a*b^2/f*arccot(d*x+c)^2*ln(1-(I+d*x+c)/(1+(d*x+c)^2)^(1/2))+3/4*I*b^3
*c/(-I*f+c*f-d*e)*polylog(4,(d*e+I*f-c*f)/(-c*f+d*e-I*f)*(I+d*x+c)^2/(1+(d*
x+c)^2))-I*b^3/f*arccot(d*x+c)^3*Pi-3/2*I*a^2*b/f*dilog((I*f-f*(d*x+c))/(d*
e+I*f-c*f))+3/2*I*a^2*b/f*dilog((I*f+f*(d*x+c))/(I*f+c*f-d*e))-3/2*I*b^3/(-
I*f+c*f-d*e)*arccot(d*x+c)*polylog(3,(d*e+I*f-c*f)/(-c*f+d*e-I*f)*(I+d*x+c)
^2/(1+(d*x+c)^2))+3/2*a*b^2*c/(-I*f+c*f-d*e)*polylog(3,(d*e+I*f-c*f)/(-c*f+
d*e-I*f)*(I+d*x+c)^2/(1+(d*x+c)^2))+6*I*d*a*b^2/f*e*arccot(d*x+c)*polylog(2
,(d*e+I*f-c*f)/(-c*f+d*e-I*f)*(I+d*x+c)^2/(1+(d*x+c)^2))/(-2*I*f+2*c*f-2*d*
e)+3/2*I*a*b^2/f*Pi*arccot(d*x+c)^2*csgn(I/((I+d*x+c)^2/(1+(d*x+c)^2)-1))*c
sgn(I*(c*f*(I+d*x+c)^2/(1+(d*x+c)^2)-d*e*(I+d*x+c)^2/(1+(d*x+c)^2)-c*f+d*e-
I*(I+d*x+c)^2/(1+(d*x+c)^2)*f-I*f))*csgn(I*(c*f*(I+d*x+c)^2/(1+(d*x+c)^2)-d
*e*(I+d*x+c)^2/(1+(d*x+c)^2)-c*f+d*e-I*(I+d*x+c)^2/(1+(d*x+c)^2)*f-I*f)/((I
+d*x+c)^2/(1+(d*x+c)^2)-1))+3/4*b^3/(-I*f+c*f-d*e)*polylog(4,(d*e+I*f-c*f)/
(-c*f+d*e-I*f)*(I+d*x+c)^2/(1+(d*x+c)^2))-I*b^3/(-I*f+c*f-d*e)*arccot(d*x+c
)^3*ln(1-(d*e+I*f-c*f)/(-c*f+d*e-I*f)*(I+d*x+c)^2/(1+(d*x+c)^2))+3*I*b^3/f*
arccot(d*x+c)^2*polylog(2,-(I+d*x+c)/(1+(d*x+c)^2)^(1/2))+3*I*b^3/f*arccot(
d*x+c)^2*polylog(2,(I+d*x+c)/(1+(d*x+c)^2)^(1/2))-3/2*I*a*b^2/(-I*f+c*f-d*e
)*polylog(3,(d*e+I*f-c*f)/(-c*f+d*e-I*f)*(I+d*x+c)^2/(1+(d*x+c)^2))+I*b^3/f
*Pi*arccot(d*x+c)^3*csgn(I*(c*f*(I+d*x+c)^2/(1+(d*x+c)^2)-d*e*(I+d*x+c)^2/(
1+(d*x+c)^2)-c*f+d*e-I*(I+d*x+c)^2/(1+(d*x+c)^2)*f-I*f)/((I+d*x+c)^2/(1+(d*
x+c)^2)-1))^2+6*I*a*b^2/f*arccot(d*x+c)*polylog(2,-(I+d*x+c)/(1+(d*x+c)^2)^
(1/2))+6*I*a*b^2/f*arccot(d*x+c)*polylog(2,(I+d*x+c)/(1+(d*x+c)^2)^(1/2))-3
*I*a*b^2/(-I*f+c*f-d*e)*arccot(d*x+c)^2*ln(1-(d*e+I*f-c*f)/(-c*f+d*e-I*f)*(
I+d*x+c)^2/(1+(d*x+c)^2))-1/2*I*b^3/f*Pi*arccot(d*x+c)^3*csgn(I*(c*f*(I+d*x
+c)^2/(1+(d*x+c)^2)-d*e*(I+d*x+c)^2/(1+(d*x+c)^2)-c*f+d*e-I*(I+d*x+c)^2/(1+
(d*x+c)^2)*f-I*f)/((I+d*x+c)^2/(1+(d*x+c)^2)-1))^3-3/2*I*b^3*c/(-I*f+c*f-d*
e)*arccot(d*x+c)^2*polylog(2,(d*e+I*f-c*f)/(-c*f+d*e-I*f)*(I+d*x+c)^2/(1+(d
*x+c)^2))-3/2*I*a^2*b*ln(f*(d*x+c)-c*f+d*e)/f*ln((I*f-f*(d*x+c))/(d*e+I*f-c
*f))+3*a*b^2*c/(-I*f+c*f-d*e)*arccot(d*x+c)^2*ln(1-(d*e+I*f-c*f)/(-c*f+d*e-
I*f)*(I+d*x+c)^2/(1+(d*x+c)^2))-1/2*I*b^3/f*Pi*arccot(d*x+c)^3*csgn(I/((I+d
*x+c)^2/(1+(d*x+c)^2)-1))*csgn(I*(c*f*(I+d*x+c)^2/(1+(d*x+c)^2)-d*e*(I+d*x+
c)^2/(1+(d*x+c)^2)-c*f+d*e-I*(I+d*x+c)^2/(1+(d*x+c)^2)*f-I*f)/((I+d*x+c)^2/
(1+(d*x+c)^2)-1))^2-1/2*I*b^3/f*Pi*arccot(d*x+c)^3*csgn(I*(c*f*(I+d*x+c)^2/
(1+(d*x+c)^2)-d*e*(I+d*x+c)^2/(1+(d*x+c)^2)-c*f+d*e-I*(I+d*x+c)^2/(1+(d*x+c
)^2)*f-I*f))*csgn(I*(c*f*(I+d*x+c)^2/(1+(d*x+c)^2)-d*e*(I+d*x+c)^2/(1+(d*x+
c)^2)-c*f+d*e-I*(I+d*x+c)^2/(1+(d*x+c)^2)*f-I*f)/((I+d*x+c)^2/(1+(d*x+c)^2)
-1))^2-3/2*d*b^3/f*e/(-I*f+c*f-d*e)*arccot(d*x+c)*polylog(3,(d*e+I*f-c*f)/(
-c*f+d*e-I*f)*(I+d*x+c)^2/(1+(d*x+c)^2))-3/2*d*a*b^2/f*e/(-I*f+c*f-d*e)*pol
ylog(3,(d*e+I*f-c*f)/(-c*f+d*e-I*f)*(I+d*x+c)^2/(1+(d*x+c)^2))-d*b^3/f*e/(-
I*f+c*f-d*e)*arccot(d*x+c)^3*ln(1-(d*e+I*f-c*f)/(-c*f+d*e-I*f)*(I+d*x+c)^2/
(1+(d*x+c)^2))+3*I*a*b^2/f*Pi*arccot(d*x+c)^2*csgn(I*(c*f*(I+d*x+c)^2/(1+(d
*x+c)^2)-d*e*(I+d*x+c)^2/(1+(d*x+c)^2)-c*f+d*e-I*(I+d*x+c)^2/(1+(d*x+c)^2)*
f-I*f)/((I+d*x+c)^2/(1+(d*x+c)^2)-1))^2-3*I*a*b^2*c/(-I*f+c*f-d*e)*arccot(d
*x+c)*polylog(2,(d*e+I*f-c*f)/(-c*f+d*e-I*f)*(I+d*x+c)^2/(1+(d*x+c)^2))-3/2
*I*a*b^2/f*Pi*arccot(d*x+c)^2*csgn(I*(c*f*(I+d*x+c)^2/(1+(d*x+c)^2)-d*e*(I+
d*x+c)^2/(1+(d*x+c)^2)-c*f+d*e-I*(I+d*x+c)^2/(1+(d*x+c)^2)*f-I*f)/((I+d*x+c
)^2/(1+(d*x+c)^2)-1))^3-3*I*d*b^3/f*e*polylog(4,(d*e+I*f-c*f)/(-c*f+d*e-I*f
```

```
)*(I+d*x+c)^2/(1+(d*x+c)^2))/(-4*I*f+4*c*f-4*d*e)+3*a^2*b*ln(f*(d*x+c)-c*f+
d*e)/f*arccot(d*x+c)+3/2*b^3*c/(-I*f+c*f-d*e)*arccot(d*x+c)*polylog(3,(d*e+
I*f-c*f)/(-c*f+d*e-I*f)*(I+d*x+c)^2/(1+(d*x+c)^2))+b^3/f*arccot(d*x+c)^3*ln
((I+d*x+c)^2/(1+(d*x+c)^2)-1)-b^3/f*arccot(d*x+c)^3*ln(1+(I+d*x+c)/(1+(d*x+
c)^2)^(1/2))-6*b^3/f*arccot(d*x+c)*polylog(3,-(I+d*x+c)/(1+(d*x+c)^2)^(1/2)
)-b^3/f*arccot(d*x+c)^3*ln(1-(I+d*x+c)/(1+(d*x+c)^2)^(1/2))-6*b^3/f*arccot(
d*x+c)*polylog(3,(I+d*x+c)/(1+(d*x+c)^2)^(1/2))+b^3*ln(f*(d*x+c)-c*f+d*e)/f
*arccot(d*x+c)^3-3/2*b^3/(-I*f+c*f-d*e)*arccot(d*x+c)^2*polylog(2,(d*e+I*f-
c*f)/(-c*f+d*e-I*f)*(I+d*x+c)^2/(1+(d*x+c)^2))-b^3/f*arccot(d*x+c)^3*ln(c*f
*(I+d*x+c)^2/(1+(d*x+c)^2)-d*e*(I+d*x+c)^2/(1+(d*x+c)^2)-c*f+d*e-I*(I+d*x+c
)^2/(1+(d*x+c)^2)*f-I*f)-6*a*b^2/f*polylog(3,-(I+d*x+c)/(1+(d*x+c)^2)^(1/2)
)-6*a*b^2/f*polylog(3,(I+d*x+c)/(1+(d*x+c)^2)^(1/2))-6*I*b^3/f*polylog(4,-(
I+d*x+c)/(1+(d*x+c)^2)^(1/2))-6*I*b^3/f*polylog(4,(I+d*x+c)/(1+(d*x+c)^2)^(
1/2))+3/2*I*a^2*b*ln(f*(d*x+c)-c*f+d*e)/f*ln((I*f+f*(d*x+c))/(I*f+c*f-d*e))
-3*I*a*b^2/f*Pi*arccot(d*x+c)^2
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{a^3 \log\left(fx+e\right)}{f}+\int \frac{28\,b^3 \arctan\left(1, dx+c\right)^3 + 3\,b^3 \arctan\left(1, dx+c\right) \log\left(d^2x^2+2\,cdx+c^2+1\right)^2 + 96\,ab^2 \arctan}{32\left(fx+e\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arccot(d*x+c))^3/(f*x+e),x, algorithm="maxima")
```

```
[Out] a^3*log(f*x + e)/f + integrate(1/32*(28*b^3*arctan2(1, d*x + c)^3 + 3*b^3*a
rctan2(1, d*x + c)*log(d^2*x^2 + 2*c*d*x + c^2 + 1)^2 + 96*a*b^2*arctan2(1,
 d*x + c)^2 + 96*a^2*b*arctan2(1, d*x + c))/(f*x + e), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{\left(a+b\,\mathrm{acot}\left(c+d\,x\right)\right)}^3}{e+f\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*acot(c + d*x))^3/(e + f*x),x)
```

```
[Out] int((a + b*acot(c + d*x))^3/(e + f*x), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*acot(d*x+c))**3/(f*x+e),x)
```

```
[Out] Timed out
```

3.145 $\int \frac{\left(a+b\cot^{-1}(c+dx)\right)^3}{(e+fx)^2}\,dx$

Optimal. Leaf size=1233

$$\frac{id\cot^{-1}(c+dx)^3b^3}{d^2e^2-2cdfe+\left(c^2+1\right)f^2}+\frac{d(de-cf)\cot^{-1}(c+dx)^3b^3}{f\left(d^2e^2-2cdfe+\left(c^2+1\right)f^2\right)}+\frac{3d\cot^{-1}(c+dx)^2\log\left(\frac{2}{1-i(c+dx)}\right)b^3}{d^2e^2-2cdfe+\left(c^2+1\right)f^2}-\frac{3d\cot^{-1}(c+}{d^2e^2}$$

```
[Out] 3*I*b^3*d*arccot(d*x+c)*polylog(2,1-2/(1-I*(d*x+c)))/(d^2*e^2-2*c*d*e*f+(c^
2+1)*f^2)+3*a*b^2*d*(-c*f+d*e)*arccot(d*x+c)^2/f/(d^2*e^2-2*c*d*e*f+(c^2+1)
*f^2)-3*I*b^3*d*arccot(d*x+c)*polylog(2,1-2*d*(f*x+e)/(d*e+I*f-c*f)/(1-I*(d
*x+c)))/(d^2*e^2-2*c*d*e*f+(c^2+1)*f^2)+b^3*d*(-c*f+d*e)*arccot(d*x+c)^3/f/
(d^2*e^2-2*c*d*e*f+(c^2+1)*f^2)-(a+b*arccot(d*x+c))^3/f/(f*x+e)-3*a^2*b*d*(
-c*f+d*e)*arctan(d*x+c)/f/(f^2+(-c*f+d*e)^2)-3*a^2*b*d*ln(f*x+e)/(f^2+(-c*f
+d*e)^2)+6*a*b^2*d*arccot(d*x+c)*ln(2/(1-I*(d*x+c)))/(d^2*e^2-2*c*d*e*f+(c^
2+1)*f^2)+3*b^3*d*arccot(d*x+c)^2*ln(2/(1-I*(d*x+c)))/(d^2*e^2-2*c*d*e*f+(c
^2+1)*f^2)-6*a*b^2*d*arccot(d*x+c)*ln(2*d*(f*x+e)/(d*e+I*f-c*f)/(1-I*(d*x+c
)))/(d^2*e^2-2*c*d*e*f+(c^2+1)*f^2)-3*b^3*d*arccot(d*x+c)^2*ln(2*d*(f*x+e)/
(d*e+I*f-c*f)/(1-I*(d*x+c)))/(d^2*e^2-2*c*d*e*f+(c^2+1)*f^2)-6*a*b^2*d*arcc
ot(d*x+c)*ln(2/(1+I*(d*x+c)))/(d^2*e^2-2*c*d*e*f+(c^2+1)*f^2)-3*b^3*d*arcco
t(d*x+c)^2*ln(2/(1+I*(d*x+c)))/(d^2*e^2-2*c*d*e*f+(c^2+1)*f^2)+3/2*a^2*b*d*
ln(1+(d*x+c)^2)/(f^2+(-c*f+d*e)^2)+3*I*a*b^2*d*arccot(d*x+c)^2/(d^2*e^2-2*c
*d*e*f+(c^2+1)*f^2)+3*I*a*b^2*d*polylog(2,1-2/(1-I*(d*x+c)))/(d^2*e^2-2*c*d
*e*f+(c^2+1)*f^2)+I*b^3*d*arccot(d*x+c)^3/(d^2*e^2-2*c*d*e*f+(c^2+1)*f^2)-3
*I*a*b^2*d*polylog(2,1-2*d*(f*x+e)/(d*e+I*f-c*f)/(1-I*(d*x+c)))/(d^2*e^2-2*
c*d*e*f+(c^2+1)*f^2)+3*I*a*b^2*d*polylog(2,1-2/(1+I*(d*x+c)))/(d^2*e^2-2*c*
d*e*f+(c^2+1)*f^2)+3*I*b^3*d*arccot(d*x+c)*polylog(2,1-2/(1+I*(d*x+c)))/(d^
2*e^2-2*c*d*e*f+(c^2+1)*f^2)+3/2*b^3*d*polylog(3,1-2/(1-I*(d*x+c)))/(d^2*e^
2-2*c*d*e*f+(c^2+1)*f^2)-3/2*b^3*d*polylog(3,1-2*d*(f*x+e)/(d*e+I*f-c*f)/(1
-I*(d*x+c)))/(d^2*e^2-2*c*d*e*f+(c^2+1)*f^2)-3/2*b^3*d*polylog(3,1-2/(1+I*(
d*x+c)))/(d^2*e^2-2*c*d*e*f+(c^2+1)*f^2)
```

Rubi [A] time = 2.25, antiderivative size = 1233, normalized size of antiderivative = 1.00, number of steps used = 35, number of rules used = 22, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 1.100, Rules used = {5046, 6741, 5058, 6688, 12, 6725, 706, 31, 635, 203, 260, 4857, 2402, 2315, 2447, 4985, 4885, 4921, 4855, 4859, 4995, 6610}

$$\frac{id\cot^{-1}(c+dx)^3b^3}{d^2e^2-2cdfe+\left(c^2+1\right)f^2}+\frac{d(de-cf)\cot^{-1}(c+dx)^3b^3}{f\left(d^2e^2-2cdfe+\left(c^2+1\right)f^2\right)}+\frac{3d\cot^{-1}(c+dx)^2\log\left(\frac{2}{1-i(c+dx)}\right)b^3}{d^2e^2-2cdfe+\left(c^2+1\right)f^2}-\frac{3d\cot^{-1}(c+}{d^2e^2}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcCot[c + d*x])^3/(e + f*x)^2,x]
```

```
[Out] ((3*I)*a*b^2*d*ArcCot[c + d*x]^2)/(d^2*e^2 - 2*c*d*e*f + (1 + c^2)*f^2) + (
3*a*b^2*d*(d*e - c*f)*ArcCot[c + d*x]^2)/(f*(d^2*e^2 - 2*c*d*e*f + (1 + c^2
)*f^2)) + (I*b^3*d*ArcCot[c + d*x]^3)/(d^2*e^2 - 2*c*d*e*f + (1 + c^2)*f^2)
 + (b^3*d*(d*e - c*f)*ArcCot[c + d*x]^3)/(f*(d^2*e^2 - 2*c*d*e*f + (1 + c^2
)*f^2)) - (a + b*ArcCot[c + d*x])^3/(f*(e + f*x)) - (3*a^2*b*d*(d*e - c*f)*
ArcTan[c + d*x])/(f*(f^2 + (d*e - c*f)^2)) - (3*a^2*b*d*Log[e + f*x])/(f^2
+ (d*e - c*f)^2) + (6*a*b^2*d*ArcCot[c + d*x]*Log[2/(1 - I*(c + d*x))])/(d^
2*e^2 - 2*c*d*e*f + (1 + c^2)*f^2) + (3*b^3*d*ArcCot[c + d*x]^2*Log[2/(1 -
I*(c + d*x))])/(d^2*e^2 - 2*c*d*e*f + (1 + c^2)*f^2) - (6*a*b^2*d*ArcCot[c
+ d*x]*Log[(2*d*(e + f*x))/((d*e + (I - c)*f)*(1 - I*(c + d*x)))])/(d^2*e^2
 - 2*c*d*e*f + (1 + c^2)*f^2) - (3*b^3*d*ArcCot[c + d*x]^2*Log[(2*d*(e + f*
x))/((d*e + (I - c)*f)*(1 - I*(c + d*x)))])/(d^2*e^2 - 2*c*d*e*f + (1 + c^2
)*f^2) - (6*a*b^2*d*ArcCot[c + d*x]*Log[2/(1 + I*(c + d*x))])/(d^2*e^2 - 2*
```

```
c*d*e*f + (1 + c^2)*f^2) - (3*b^3*d*ArcCot[c + d*x]^2*Log[2/(1 + I*(c + d*x
))])/(d^2*e^2 - 2*c*d*e*f + (1 + c^2)*f^2) + (3*a^2*b*d*Log[1 + (c + d*x)^2
])/(2*(f^2 + (d*e - c*f)^2)) + ((3*I)*a*b^2*d*PolyLog[2, 1 - 2/(1 - I*(c +
d*x))])/(d^2*e^2 - 2*c*d*e*f + (1 + c^2)*f^2) + ((3*I)*b^3*d*ArcCot[c + d*x
]*PolyLog[2, 1 - 2/(1 - I*(c + d*x))])/(d^2*e^2 - 2*c*d*e*f + (1 + c^2)*f^2
) - ((3*I)*a*b^2*d*PolyLog[2, 1 - (2*d*(e + f*x))/((d*e + (I - c)*f)*(1 - I
*(c + d*x)))])/(d^2*e^2 - 2*c*d*e*f + (1 + c^2)*f^2) - ((3*I)*b^3*d*ArcCot[
c + d*x]*PolyLog[2, 1 - (2*d*(e + f*x))/((d*e + (I - c)*f)*(1 - I*(c + d*x)
))])/(d^2*e^2 - 2*c*d*e*f + (1 + c^2)*f^2) + ((3*I)*a*b^2*d*PolyLog[2, 1 -
2/(1 + I*(c + d*x))])/(d^2*e^2 - 2*c*d*e*f + (1 + c^2)*f^2) + ((3*I)*b^3*d*
ArcCot[c + d*x]*PolyLog[2, 1 - 2/(1 + I*(c + d*x))])/(d^2*e^2 - 2*c*d*e*f +
 (1 + c^2)*f^2) + (3*b^3*d*PolyLog[3, 1 - 2/(1 - I*(c + d*x))])/(2*(d^2*e^2
 - 2*c*d*e*f + (1 + c^2)*f^2)) - (3*b^3*d*PolyLog[3, 1 - (2*d*(e + f*x))/((
d*e + (I - c)*f)*(1 - I*(c + d*x)))])/(2*(d^2*e^2 - 2*c*d*e*f + (1 + c^2)*f
^2)) - (3*b^3*d*PolyLog[3, 1 - 2/(1 + I*(c + d*x))])/(2*(d^2*e^2 - 2*c*d*e*
f + (1 + c^2)*f^2))
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 635

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> Dist[d, Int[1/(
a + c*x^2), x], x] + Dist[e, Int[x/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e
}, x] &&  !NiceSqrtQ[-(a*c)]
```

Rule 706

```
Int[1/(((d_) + (e_.)*(x_))*((a_) + (c_.)*(x_)^2)), x_Symbol] :> Dist[e^2/(c
*d^2 + a*e^2), Int[1/(d + e*x), x], x] + Dist[1/(c*d^2 + a*e^2), Int[(c*d -
 c*e*x)/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e}, x] && NeQ[c*d^2 + a*e^2,
 0]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2402

```
Int[Log[(c_.)/((d_) + (e_.)*(x_))]/((f_) + (g_.)*(x_)^2), x_Symbol] :> -Dis
t[e/g, Subst[Int[Log[2*d*x]/(1 - 2*d*x), x], x, 1/(d + e*x)], x] /; FreeQ[{
```

```
c, d, e, f, g}, x] && EqQ[c, 2*d] && EqQ[e^2*f + d^2*g, 0]
```

Rule 2447

```
Int[Log[u_]*(Pq_)^(m_.), x_Symbol] :> With[{C = FullSimplify[(Pq^m*(1 - u))
/D[u, x]]}, Simp[C*PolyLog[2, 1 - u], x] /; FreeQ[C, x]] /; IntegerQ[m] &&
PolyQ[Pq, x] && RationalFunctionQ[u, x] && LeQ[RationalFunctionExponents[u,
 x][[2]], Expon[Pq, x]]
```

Rule 4855

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)), x_Symbol]
 :> -Simp[((a + b*ArcCot[c*x])^p*Log[2/(1 + (e*x)/d)])/e, x] - Dist[(b*c*p)
/e, Int[((a + b*ArcCot[c*x])^(p - 1)*Log[2/(1 + (e*x)/d)])/(1 + c^2*x^2), x
], x] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[p, 0] && EqQ[c^2*d^2 + e^2, 0]
```

Rule 4857

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))/((d_) + (e_.)*(x_)), x_Symbol] :> -S
imp[((a + b*ArcCot[c*x])*Log[2/(1 - I*c*x)])/e, x] + (-Dist[(b*c)/e, Int[Lo
g[2/(1 - I*c*x)]/(1 + c^2*x^2), x], x] + Dist[(b*c)/e, Int[Log[(2*c*(d + e*
x))/((c*d + I*e)*(1 - I*c*x))]/(1 + c^2*x^2), x], x] + Simp[((a + b*ArcCot[
c*x])*Log[(2*c*(d + e*x))/((c*d + I*e)*(1 - I*c*x))])/e, x]) /; FreeQ[{a, b
, c, d, e}, x] && NeQ[c^2*d^2 + e^2, 0]
```

Rule 4859

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^2/((d_) + (e_.)*(x_)), x_Symbol] :>
-Simp[((a + b*ArcCot[c*x])^2*Log[2/(1 - I*c*x)])/e, x] + (Simp[((a + b*ArcC
ot[c*x])^2*Log[(2*c*(d + e*x))/((c*d + I*e)*(1 - I*c*x))])/e, x] - Simp[(I*
b*(a + b*ArcCot[c*x])*PolyLog[2, 1 - 2/(1 - I*c*x)])/e, x] + Simp[(I*b*(a +
 b*ArcCot[c*x])*PolyLog[2, 1 - (2*c*(d + e*x))/((c*d + I*e)*(1 - I*c*x))])/
e, x] - Simp[(b^2*PolyLog[3, 1 - 2/(1 - I*c*x)])/(2*e), x] + Simp[(b^2*Poly
Log[3, 1 - (2*c*(d + e*x))/((c*d + I*e)*(1 - I*c*x))])/(2*e), x]) /; FreeQ[
{a, b, c, d, e}, x] && NeQ[c^2*d^2 + e^2, 0]
```

Rule 4885

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)^2), x_Symbo
l] :> -Simp[(a + b*ArcCot[c*x])^(p + 1)/(b*c*d*(p + 1)), x] /; FreeQ[{a, b,
 c, d, e, p}, x] && EqQ[e, c^2*d] && NeQ[p, -1]
```

Rule 4921

```
Int[(((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)*(x_))/((d_) + (e_.)*(x_)^2),
x_Symbol] :> Simp[(I*(a + b*ArcCot[c*x])^(p + 1))/(b*e*(p + 1)), x] - Dist[
1/(c*d), Int[(a + b*ArcCot[c*x])^p/(I - c*x), x], x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[e, c^2*d] && IGtQ[p, 0]
```

Rule 4985

```
Int[(((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)*((f_) + (g_.)*(x_))^(m_.))/((
d_) + (e_.)*(x_)^2), x_Symbol] :> Int[ExpandIntegrand[(a + b*ArcCot[c*x])^p
/(d + e*x^2), (f + g*x)^m, x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && IGt
Q[p, 0] && EqQ[e, c^2*d] && IGtQ[m, 0]
```

Rule 4995

```
Int[(Log[u_]*((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.))/((d_) + (e_.)*(x_)^2
```

```
), x_Symbol] :> -Simp[(I*(a + b*ArcCot[c*x])^p*PolyLog[2, 1 - u])/(2*c*d),
x] - Dist[(b*p*I)/2, Int[((a + b*ArcCot[c*x])^(p - 1)*PolyLog[2, 1 - u])/(d
 + e*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[p, 0] && EqQ[e, c^2*
d] && EqQ[(1 - u)^2 - (1 - (2*I)/(I - c*x))^2, 0]
```

Rule 5046

```
Int[((a_.) + ArcCot[(c_) + (d_.)*(x_)]*(b_.))^(p_.)*((e_.) + (f_.)*(x_))^(m
_), x_Symbol] :> Simp[((e + f*x)^(m + 1)*(a + b*ArcCot[c + d*x])^p)/(f*(m +
 1)), x] + Dist[(b*d*p)/(f*(m + 1)), Int[((e + f*x)^(m + 1)*(a + b*ArcCot[c
 + d*x])^(p - 1))/(1 + (c + d*x)^2), x], x] /; FreeQ[{a, b, c, d, e, f}, x]
 && IGtQ[p, 0] && ILtQ[m, -1]
```

Rule 5058

```
Int[((a_.) + ArcCot[(c_) + (d_.)*(x_)]*(b_.))^(p_.)*((e_.) + (f_.)*(x_))^(m
_.)*((A_.) + (B_.)*(x_) + (C_.)*(x_)^2)^(q_.), x_Symbol] :> Dist[1/d, Subst
[Int[((d*e - c*f)/d + (f*x)/d)^m*(C/d^2 + (C*x^2)/d^2)^q*(a + b*ArcCot[x])^
p, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, A, B, C, m, p, q}, x] &&
 EqQ[B*(1 + c^2) - 2*A*c*d, 0] && EqQ[2*c*C - B*d, 0]
```

Rule 6610

```
Int[(u_)*PolyLog[n_, v_], x_Symbol] :> With[{w = DerivativeDivides[v, u*v,
x]}, Simp[w*PolyLog[n + 1, v], x] /;  !FalseQ[w]] /; FreeQ[n, x]
```

Rule 6688

```
Int[u_, x_Symbol] :> With[{v = SimplifyIntegrand[u, x]}, Int[v, x] /; Simpl
erIntegrandQ[v, u, x]]
```

Rule 6725

```
Int[(u_)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> With[{v = RationalFunctionE
xpand[u/(a + b*x^n), x]}, Int[v, x] /; SumQ[v]] /; FreeQ[{a, b}, x] && IGtQ
[n, 0]
```

Rule 6741

```
Int[u_, x_Symbol] :> With[{v = NormalizeIntegrand[u, x]}, Int[v, x] /; v =!
= u]
```

Rubi steps

$$\int \frac{\left(a+b\cot^{-1}(c+dx)\right)^3}{(e+fx)^2}\,dx = -\frac{\left(a+b\cot^{-1}(c+dx)\right)^3}{f(e+fx)} - \frac{(3bd)\int \frac{\left(a+b\cot^{-1}(c+dx)\right)^2}{(e+fx)\left(1+(c+dx)^2\right)}\,dx}{f}$$

$$= -\frac{\left(a+b\cot^{-1}(c+dx)\right)^3}{f(e+fx)} - \frac{(3bd)\int \frac{\left(a+b\cot^{-1}(c+dx)\right)^2}{(e+fx)\left(1+c^2+2cdx+d^2x^2\right)}\,dx}{f}$$

$$= -\frac{\left(a+b\cot^{-1}(c+dx)\right)^3}{f(e+fx)} - \frac{(3b)\operatorname{Subst}\left(\int \frac{\left(a+b\cot^{-1}(x)\right)^2}{\left(\frac{de-cf}{d}+\frac{fx}{d}\right)\left(1+x^2\right)}\,dx, x, c+dx\right)}{f}$$

$$= -\frac{\left(a+b\cot^{-1}(c+dx)\right)^3}{f(e+fx)} - \frac{(3b)\operatorname{Subst}\left(\int \frac{d\left(a+b\cot^{-1}(x)\right)^2}{(de-cf+fx)\left(1+x^2\right)}\,dx, x, c+dx\right)}{f}$$

$$= -\frac{\left(a+b\cot^{-1}(c+dx)\right)^3}{f(e+fx)} - \frac{(3bd)\operatorname{Subst}\left(\int \frac{\left(a+b\cot^{-1}(x)\right)^2}{(de-cf+fx)\left(1+x^2\right)}\,dx, x, c+dx\right)}{f}$$

$$= -\frac{\left(a+b\cot^{-1}(c+dx)\right)^3}{f(e+fx)} - \frac{(3bd)\operatorname{Subst}\left(\int \left(\frac{a^2}{(de-cf+fx)\left(1+x^2\right)} + \frac{2ab\cot^{-1}(x)}{(de-cf+fx)\left(1+x^2\right)} + \cdots\right.\right.}{f}$$

$$= -\frac{\left(a+b\cot^{-1}(c+dx)\right)^3}{f(e+fx)} - \frac{\left(3a^2bd\right)\operatorname{Subst}\left(\int \frac{1}{(de-cf+fx)\left(1+x^2\right)}\,dx, x, c+dx\right)}{f} - \cdots$$

$$= -\frac{\left(a+b\cot^{-1}(c+dx)\right)^3}{f(e+fx)} - \frac{\left(6ab^2d\right)\operatorname{Subst}\left(\int \left(\frac{f^2\cot^{-1}(x)}{\left(d^2e^2-2cdef+\left(1+c^2\right)f^2\right)(de-cf+fx)} + \cdots\right.\right.}{f}$$

$$= -\frac{\left(a+b\cot^{-1}(c+dx)\right)^3}{f(e+fx)} - \frac{3a^2bd\log(e+fx)}{f^2+(de-cf)^2} - \frac{\left(6ab^2d\right)\operatorname{Subst}\left(\int \frac{(de-cf-fx)\cot^{-1}\cdots}{1+x^2}\cdots\right.}{f\left(d^2e^2-2cdef+(1+\cdots\right.}$$

$$= -\frac{\left(a+b\cot^{-1}(c+dx)\right)^3}{f(e+fx)} - \frac{3a^2bd(de-cf)\tan^{-1}(c+dx)}{f\left(f^2+(de-cf)^2\right)} - \frac{3a^2bd\log(e+fx)}{f^2+(de-cf)^2} + \cdots$$

$$= -\frac{\left(a+b\cot^{-1}(c+dx)\right)^3}{f(e+fx)} - \frac{3a^2bd(de-cf)\tan^{-1}(c+dx)}{f\left(f^2+(de-cf)^2\right)} - \frac{3a^2bd\log(e+fx)}{f^2+(de-cf)^2} + \cdots$$

$$= \frac{3iab^2d\cot^{-1}(c+dx)^2}{d^2e^2-2cdef+\left(1+c^2\right)f^2} + \frac{3ab^2d(de-cf)\cot^{-1}(c+dx)^2}{f\left(d^2e^2-2cdef+\left(1+c^2\right)f^2\right)} + \frac{ib^3d\cot^{-1}(c\cdots}{d^2e^2-2cdef+\cdots}$$

$$= \frac{3iab^2d\cot^{-1}(c+dx)^2}{d^2e^2-2cdef+\left(1+c^2\right)f^2} + \frac{3ab^2d(de-cf)\cot^{-1}(c+dx)^2}{f\left(d^2e^2-2cdef+\left(1+c^2\right)f^2\right)} + \frac{ib^3d\cot^{-1}(c\cdots}{d^2e^2-2cdef+\cdots}$$

$$= \frac{3iab^2d\cot^{-1}(c+dx)^2}{d^2e^2-2cdef+\left(1+c^2\right)f^2} + \frac{3ab^2d(de-cf)\cot^{-1}(c+dx)^2}{f\left(d^2e^2-2cdef+\left(1+c^2\right)f^2\right)} + \frac{ib^3d\cot^{-1}(c\cdots}{d^2e^2-2cdef+\cdots}$$

$$= \frac{3iab^2d\cot^{-1}(c+dx)^2}{d^2e^2-2cdef+\left(1+c^2\right)f^2} + \frac{3ab^2d(de-cf)\cot^{-1}(c+dx)^2}{f\left(d^2e^2-2cdef+\left(1+c^2\right)f^2\right)} + \frac{ib^3d\cot^{-1}(c\cdots}{d^2e^2-2cdef+\cdots}$$

Mathematica [A] time = 38.76, size = 1584, normalized size = 1.28

result too large to display

Warning: Unable to verify antiderivative.

```
[In] Integrate[(a + b*ArcCot[c + d*x])^3/(e + f*x)^2,x]
```

```
[Out] -(a^3/(f*(e + f*x))) - (3*a^2*b*ArcCot[c + d*x])/(f*(e + f*x)) + (3*a^2*b*d
*(-(d*e) + c*f)*ArcTan[c + d*x])/(f*(d^2*e^2 - 2*c*d*e*f + f^2 + c^2*f^2))
- (3*a^2*b*d*Log[e + f*x])/(d^2*e^2 - 2*c*d*e*f + f^2 + c^2*f^2) + (3*a^2*b
*d*Log[1 + c^2 + 2*c*d*x + d^2*x^2])/(2*(d^2*e^2 - 2*c*d*e*f + f^2 + c^2*f^
2)) - (3*a*b^2*(1 + (c + d*x)^2)*(f/Sqrt[1 + (c + d*x)^(-2)] + (d*e - c*f)/
((c + d*x)*Sqrt[1 + (c + d*x)^(-2)]))^2*((E^(I*ArcTan[f/(d*e - c*f)])*ArcCo
t[c + d*x]^2)/((-(d*e) + c*f)*Sqrt[1 + f^2/(d*e - c*f)^2]) + ArcCot[c + d*x
]^2/((c + d*x)*Sqrt[1 + (c + d*x)^(-2)]*(f/Sqrt[1 + (c + d*x)^(-2)] + (d*e
- c*f)/((c + d*x)*Sqrt[1 + (c + d*x)^(-2)]))) + (f*(I*Pi*ArcCot[c + d*x] +
Pi*Log[1 + E^((-2*I)*ArcCot[c + d*x])] + 2*ArcCot[c + d*x]*Log[1 - E^((2*I)
*(ArcCot[c + d*x] + ArcTan[f/(d*e - c*f)]))] - Pi*Log[1/Sqrt[1 + (c + d*x)^
(-2)]] + 2*ArcTan[f/(-(d*e) + c*f)]*(I*ArcCot[c + d*x] - Log[1 - E^((2*I)*(
ArcCot[c + d*x] + ArcTan[f/(d*e - c*f)]))] + Log[Sin[ArcCot[c + d*x] + ArcT
an[f/(d*e - c*f)]]]]) - I*PolyLog[2, E^((2*I)*(ArcCot[c + d*x] + ArcTan[f/(d
*e - c*f)]))]))/(d^2*e^2 - 2*c*d*e*f + (1 + c^2)*f^2)))/(d*f*(e + f*x)^2) +
 (b^3*(1 + (c + d*x)^2)*(f/Sqrt[1 + (c + d*x)^(-2)] + (d*e - c*f)/((c + d*x
)*Sqrt[1 + (c + d*x)^(-2)]))^2*((d*ArcCot[c + d*x]^3)/(f*(c + d*x)*Sqrt[1 +
 (c + d*x)^(-2)]*(-(f/Sqrt[1 + (c + d*x)^(-2)]) - (d*e)/((c + d*x)*Sqrt[1 +
 (c + d*x)^(-2)]) + (c*f)/((c + d*x)*Sqrt[1 + (c + d*x)^(-2)]))) + (d*(ArcC
ot[c + d*x]*(-2*d*e*ArcCot[c + d*x]^2 - (2*I)*f*ArcCot[c + d*x]^2 + 2*c*f*A
rcCot[c + d*x]^2 + 4*d*e*E^(I*ArcTan[f/(d*e - c*f)])*Sqrt[(d^2*e^2 - 2*c*d*
e*f + (1 + c^2)*f^2)/(d*e - c*f)^2]*ArcCot[c + d*x]^2 - 4*c*E^(I*ArcTan[f/(
d*e - c*f)])*f*Sqrt[(d^2*e^2 - 2*c*d*e*f + (1 + c^2)*f^2)/(d*e - c*f)^2]*Ar
cCot[c + d*x]^2 + f*Pi*Log[64] - 6*f*Pi*Log[1 + E^((-2*I)*ArcCot[c + d*x])]
 - 12*f*ArcCot[c + d*x]*Log[1 - E^((2*I)*(ArcCot[c + d*x] + ArcTan[f/(d*e -
 c*f)]))] + 12*f*ArcTan[f/(-(d*e) + c*f)]*Log[1 - E^((2*I)*(ArcCot[c + d*x]
 + ArcTan[f/(d*e - c*f)]))] + 6*f*Pi*Log[(1/Sqrt[1 + (c + d*x)^(-2)] - I/((
c + d*x)*Sqrt[1 + (c + d*x)^(-2)]))/Sqrt[1 + (c + d*x)^(-2)]] + 6*f*ArcCot[
c + d*x]*Log[-((1/Sqrt[1 + (c + d*x)^(-2)] + I/((c + d*x)*Sqrt[1 + (c + d*x
)^(-2)]))*((-1 + E^((2*I)*ArcTan[f/(d*e - c*f)]))/Sqrt[1 + (c + d*x)^(-2)]
+ (I*(1 + E^((2*I)*ArcTan[f/(d*e - c*f)])))/((c + d*x)*Sqrt[1 + (c + d*x)^(
-2)])))] - 12*f*ArcTan[f/(d*e - c*f)]*(Log[(((-I)*(-1 + E^((2*I)*ArcTan[f/(
d*e - c*f)])))/Sqrt[1 + (c + d*x)^(-2)] + (1 + E^((2*I)*ArcTan[f/(d*e - c*f
)]))/((c + d*x)*Sqrt[1 + (c + d*x)^(-2)]))/(2*E^(I*ArcTan[f/(d*e - c*f)]))]
 - Log[1 - E^((2*I)*ArcTan[f/(d*e - c*f)])*Cos[2*ArcCot[c + d*x]] - I*E^((2
*I)*ArcTan[f/(d*e - c*f)])*Sin[2*ArcCot[c + d*x]]] - Log[Sin[ArcCot[c + d*x
] + ArcTan[f/(d*e - c*f)]]]])) + (6*I)*f*ArcCot[c + d*x]*PolyLog[2, E^((2*I)
*(ArcCot[c + d*x] + ArcTan[f/(d*e - c*f)]))] - 3*f*PolyLog[3, E^((2*I)*(Arc
Cot[c + d*x] + ArcTan[f/(d*e - c*f)]))]))/(2*f*(d^2*e^2 - 2*c*d*e*f + (1 +
c^2)*f^2))))/(d^2*(e + f*x)^2)
```

fricas [F] time = 0.73, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{b^3\operatorname{arccot}(dx+c)^3+3\,ab^2\operatorname{arccot}(dx+c)^2+3\,a^2b\operatorname{arccot}(dx+c)+a^3}{f^2x^2+2\,efx+e^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arccot(d*x+c))^3/(f*x+e)^2,x, algorithm="fricas")
```

```
[Out] integral((b^3*arccot(d*x + c)^3 + 3*a*b^2*arccot(d*x + c)^2 + 3*a^2*b*arcco
t(d*x + c) + a^3)/(f^2*x^2 + 2*e*f*x + e^2), x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arccot(d*x+c))^3/(f*x+e)^2,x, algorithm="giac")
```

```
[Out] Exception raised: RuntimeError >> An error occurred running a Giac command:
INPUT:sage2OUTPUT:Evaluation time: 42.28Not invertible Error: Bad Argument
Value
```

maple [A] time = 0.87, size = 1579, normalized size = 1.28

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arccot(d*x+c))^3/(f*x+e)^2,x)
```

```
[Out] -3/2*I*d*a*b^2/(c^2*f^2-2*c*d*e*f+d^2*e^2+f^2)*ln(I+d*x+c)*ln(1/2*I*(d*x+c-
I))-3/4*I*d*a*b^2/(c^2*f^2-2*c*d*e*f+d^2*e^2+f^2)*ln(I+d*x+c)^2+3*I*d*a*b^2
/(c^2*f^2-2*c*d*e*f+d^2*e^2+f^2)*dilog((I*f-f*(d*x+c))/(d*e+I*f-c*f))+3/2*I
*d*a*b^2/(c^2*f^2-2*c*d*e*f+d^2*e^2+f^2)*dilog(-1/2*I*(I+d*x+c))-d*a^3/(d*f
*x+d*e)/f+3*I*d*a*b^2/(c^2*f^2-2*c*d*e*f+d^2*e^2+f^2)*ln(f*(d*x+c)-c*f+d*e)
*ln((I*f-f*(d*x+c))/(d*e+I*f-c*f))-3/2*I*d*a*b^2/(c^2*f^2-2*c*d*e*f+d^2*e^2
+f^2)*ln(d*x+c-I)*ln(1+(d*x+c)^2)-3*d^2*a*b^2/f/(c^2*f^2-2*c*d*e*f+d^2*e^2+
f^2)*arctan(d*x+c)^2*e+6*d*a*b^2*arccot(d*x+c)/(c^2*f^2-2*c*d*e*f+d^2*e^2+f
^2)*arctan(d*x+c)*c-3*d^2*a^2*b/f/(c^2*f^2-2*c*d*e*f+d^2*e^2+f^2)*arctan(d*
x+c)*e-3*I*d*a*b^2/(c^2*f^2-2*c*d*e*f+d^2*e^2+f^2)*ln(f*(d*x+c)-c*f+d*e)*ln
((I*f+f*(d*x+c))/(I*f+c*f-d*e))+3*I*d*b^3/(-I*f+c*f-d*e)/(I*f+c*f-d*e)*arcc
ot(d*x+c)*polylog(2,(-I*f+c*f-d*e)*(I+d*x+c)^2/(1+(d*x+c)^2)/(I*f+c*f-d*e))
+3/2*I*d*a*b^2/(c^2*f^2-2*c*d*e*f+d^2*e^2+f^2)*ln(d*x+c-I)*ln(-1/2*I*(I+d*x
+c))+3/2*I*d*a*b^2/(c^2*f^2-2*c*d*e*f+d^2*e^2+f^2)*ln(I+d*x+c)*ln(1+(d*x+c)
^2)-d*b^3/(d*f*x+d*e)/f*arccot(d*x+c)^3-d*b^3/f*arccot(d*x+c)^3/(-I*f+c*f-d
*e)-3/2*d*b^3/(-I*f+c*f-d*e)/(I*f+c*f-d*e)*polylog(3,(-I*f+c*f-d*e)*(I+d*x+
c)^2/(1+(d*x+c)^2)/(I*f+c*f-d*e))+3/2*d*a^2*b/(c^2*f^2-2*c*d*e*f+d^2*e^2+f^
2)*ln(1+(d*x+c)^2)+3/4*I*d*a*b^2/(c^2*f^2-2*c*d*e*f+d^2*e^2+f^2)*ln(d*x+c-I
)^2+2*I*d*b^3/(-I*f+c*f-d*e)/(I*f+c*f-d*e)*arccot(d*x+c)^3-3/2*I*d*a*b^2/(c
^2*f^2-2*c*d*e*f+d^2*e^2+f^2)*dilog(1/2*I*(d*x+c-I))-3*I*d*a*b^2/(c^2*f^2-2
*c*d*e*f+d^2*e^2+f^2)*dilog((I*f+f*(d*x+c))/(I*f+c*f-d*e))+3*d*a*b^2/(c^2*f
^2-2*c*d*e*f+d^2*e^2+f^2)*arctan(d*x+c)^2*c-3*d*a^2*b/(d*f*x+d*e)/f*arccot(
d*x+c)-6*d*a*b^2*arccot(d*x+c)/(c^2*f^2-2*c*d*e*f+d^2*e^2+f^2)*ln(f*(d*x+c)
-c*f+d*e)+3*d*a*b^2*arccot(d*x+c)/(c^2*f^2-2*c*d*e*f+d^2*e^2+f^2)*ln(1+(d*x
+c)^2)+3*d*a^2*b/(c^2*f^2-2*c*d*e*f+d^2*e^2+f^2)*arctan(d*x+c)*c-3*d*b^3/(-
I*f+c*f-d*e)/(I*f+c*f-d*e)*arccot(d*x+c)^2*ln(1-(-I*f+c*f-d*e)*(I+d*x+c)^2/
(1+(d*x+c)^2)/(I*f+c*f-d*e))-3*d*a*b^2/(d*f*x+d*e)/f*arccot(d*x+c)^2-6*d^2*
a*b^2/f*arccot(d*x+c)/(c^2*f^2-2*c*d*e*f+d^2*e^2+f^2)*arctan(d*x+c)*e-3*d*a
^2*b/(c^2*f^2-2*c*d*e*f+d^2*e^2+f^2)*ln(f*(d*x+c)-c*f+d*e)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{3}{2}\left(d\left(\frac{2\left(d^2e-cdf\right)\arctan\left(\frac{d^2x+cd}{d}\right)}{\left(d^2e^2f-2\,cdef^2+\left(c^2+1\right)f^3\right)d}-\frac{\log\left(d^2x^2+2\,cdx+c^2+1\right)}{d^2e^2-2\,cdef+\left(c^2+1\right)f^2}+\frac{2\,\log\left(fx+e\right)}{d^2e^2-2\,cdef+\left(c^2+1\right)f^2}\right)+\frac{2\,\mathrm{arcc}}{f^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arccot(d*x+c))^3/(f*x+e)^2,x, algorithm="maxima")
```

```
[Out] -3/2*(d*(2*(d^2*e - c*d*f)*arctan((d^2*x + c*d)/d)/((d^2*e^2*f - 2*c*d*e*f^
2 + (c^2 + 1)*f^3)*d) - log(d^2*x^2 + 2*c*d*x + c^2 + 1)/(d^2*e^2 - 2*c*d*e
*f + (c^2 + 1)*f^2) + 2*log(f*x + e)/(d^2*e^2 - 2*c*d*e*f + (c^2 + 1)*f^2))
 + 2*arccot(d*x + c)/(f^2*x + e*f))*a^2*b - a^3/(f^2*x + e*f) - 1/32*(4*b^3
*arctan2(1, d*x + c)^3 - 3*b^3*arctan2(1, d*x + c)*log(d^2*x^2 + 2*c*d*x +
c^2 + 1)^2 - 32*(f^2*x + e*f)*integrate(-1/32*(12*b^3*d*e*arctan2(1, d*x +
c)^2 - 4*(7*b^3*arctan2(1, d*x + c)^3 + 24*a*b^2*arctan2(1, d*x + c)^2)*d^2
*f*x^2 + 4*(3*b^3*arctan2(1, d*x + c)^2 - 2*(7*b^3*arctan2(1, d*x + c)^3 +
24*a*b^2*arctan2(1, d*x + c)^2)*c)*d*f*x - 3*(b^3*d^2*f*x^2*arctan2(1, d*x
+ c) + b^3*d*e + (2*b^3*c*arctan2(1, d*x + c) + b^3)*d*f*x + (b^3*c^2*arcta
n2(1, d*x + c) + b^3*arctan2(1, d*x + c))*f)*log(d^2*x^2 + 2*c*d*x + c^2 +
1)^2 - 4*(7*b^3*arctan2(1, d*x + c)^3 + 24*a*b^2*arctan2(1, d*x + c)^2 + (7
*b^3*arctan2(1, d*x + c)^3 + 24*a*b^2*arctan2(1, d*x + c)^2)*c^2)*f + 12*(b
^3*d^2*f*x^2*arctan2(1, d*x + c) + b^3*c*d*e*arctan2(1, d*x + c) + (b^3*d^2
*e*arctan2(1, d*x + c) + b^3*c*d*f*arctan2(1, d*x + c))*x)*log(d^2*x^2 + 2*
c*d*x + c^2 + 1))/(d^2*f^3*x^4 + (c^2 + 1)*e^2*f + 2*(d^2*e*f^2 + c*d*f^3)*
x^3 + (d^2*e^2*f + 4*c*d*e*f^2 + (c^2 + 1)*f^3)*x^2 + 2*(c*d*e^2*f + (c^2 +
 1)*e*f^2)*x), x))/(f^2*x + e*f)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a+b\,\mathrm{acot}\,(c+d\,x))^3}{\left(e+f\,x\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*acot(c + d*x))^3/(e + f*x)^2,x)
```

```
[Out] int((a + b*acot(c + d*x))^3/(e + f*x)^2, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*acot(d*x+c))**3/(f*x+e)**2,x)
```

```
[Out] Timed out
```

3.146 $\int (e+fx)^m \left(a+b\cot^{-1}(c+dx)\right)\,dx$

Optimal. Leaf size=177

$$\frac{(e+fx)^{m+1}\left(a+b\cot^{-1}(c+dx)\right)}{f(m+1)}+\frac{ibd(e+fx)^{m+2}\,{}_2F_1\left(1,m+2;m+3;\frac{d(e+fx)}{de-cf+if}\right)}{2f(m+1)(m+2)(de+(-c+i)f)}-\frac{ibd(e+fx)^{m+2}\,{}_2F_1\left(1,m+2\right.}{2f(m+1)(m+2)(de}$$

```
[Out] (f*x+e)^(1+m)*(a+b*arccot(d*x+c))/f/(1+m)+1/2*I*b*d*(f*x+e)^(2+m)*hypergeom
([1, 2+m],[3+m],d*(f*x+e)/(d*e+I*f-c*f))/f/(d*e+(I-c)*f)/(1+m)/(2+m)-1/2*I*
b*d*(f*x+e)^(2+m)*hypergeom([1, 2+m],[3+m],d*(f*x+e)/(d*e-(I+c)*f))/f/(d*e-
(I+c)*f)/(1+m)/(2+m)
```

Rubi [A] time = 0.24, antiderivative size = 177, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222, Rules used = {5048, 4863, 712, 68}

$$\frac{(e+fx)^{m+1}\left(a+b\cot^{-1}(c+dx)\right)}{f(m+1)}+\frac{ibd(e+fx)^{m+2}\,{}_2F_1\left(1,m+2;m+3;\frac{d(e+fx)}{de-cf+if}\right)}{2f(m+1)(m+2)(de+(-c+i)f)}-\frac{ibd(e+fx)^{m+2}\,{}_2F_1\left(1,m+2\right.}{2f(m+1)(m+2)(de}$$

Antiderivative was successfully verified.

```
[In] Int[(e + f*x)^m*(a + b*ArcCot[c + d*x]),x]
```

```
[Out] ((e + f*x)^(1 + m)*(a + b*ArcCot[c + d*x]))/(f*(1 + m)) + ((I/2)*b*d*(e + f
*x)^(2 + m)*Hypergeometric2F1[1, 2 + m, 3 + m, (d*(e + f*x))/(d*e + I*f - c
*f)])/(f*(d*e + (I - c)*f)*(1 + m)*(2 + m)) - ((I/2)*b*d*(e + f*x)^(2 + m)*
Hypergeometric2F1[1, 2 + m, 3 + m, (d*(e + f*x))/(d*e - (I + c)*f)])/(f*(d*
e - (I + c)*f)*(1 + m)*(2 + m))
```

Rule 68

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[((
b*c - a*d)^n*(a + b*x)^(m + 1)*Hypergeometric2F1[-n, m + 1, m + 2, -((d*(a
+ b*x))/(b*c - a*d))])/(b^(n + 1)*(m + 1)), x] /; FreeQ[{a, b, c, d, m}, x]
 && NeQ[b*c - a*d, 0] &&  !IntegerQ[m] && IntegerQ[n]
```

Rule 712

```
Int[((d_) + (e_.)*(x_))^(m_)/((a_) + (c_.)*(x_)^2), x_Symbol] :> Int[Expand
Integrand[(d + e*x)^m, 1/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e, m}, x] &
& NeQ[c*d^2 + a*e^2, 0] &&  !IntegerQ[m]
```

Rule 4863

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))*((d_) + (e_.)*(x_))^(q_.), x_Symbol]
 :> Simp[((d + e*x)^(q + 1)*(a + b*ArcCot[c*x]))/(e*(q + 1)), x] + Dist[(b*
c)/(e*(q + 1)), Int[(d + e*x)^(q + 1)/(1 + c^2*x^2), x], x] /; FreeQ[{a, b,
 c, d, e, q}, x] && NeQ[q, -1]
```

Rule 5048

```
Int[((a_.) + ArcCot[(c_) + (d_.)*(x_)]*(b_.))^(p_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cCot[x])^p, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, p}, x] && IG
tQ[p, 0]
```

Rubi steps

$$\int (e+fx)^m \left(a+b\cot^{-1}(c+dx)\right) dx = \frac{\text{Subst}\left(\int \left(\frac{de-cf}{d}+\frac{fx}{d}\right)^m \left(a+b\cot^{-1}(x)\right) dx, x, c+dx\right)}{d}$$

$$= \frac{(e+fx)^{1+m}\left(a+b\cot^{-1}(c+dx)\right)}{f(1+m)} + \frac{b\,\text{Subst}\left(\int \frac{\left(\frac{de-cf}{d}+\frac{fx}{d}\right)^{1+m}}{1+x^2} dx, x, c+dx\right.}{f(1+m)}$$

$$= \frac{(e+fx)^{1+m}\left(a+b\cot^{-1}(c+dx)\right)}{f(1+m)} + \frac{b\,\text{Subst}\left(\int \left(\frac{i\left(\frac{de-cf}{d}+\frac{fx}{d}\right)^{1+m}}{2(i-x)} + \frac{i\left(\frac{de-cf}{d}+\frac{fx}{d}\right.}{2(i+x}\right.\right.}{f(1+m)}$$

$$= \frac{(e+fx)^{1+m}\left(a+b\cot^{-1}(c+dx)\right)}{f(1+m)} + \frac{(ib)\,\text{Subst}\left(\int \frac{\left(\frac{de-cf}{d}+\frac{fx}{d}\right)^{1+m}}{i-x} dx, x, c+\right.}{2f(1+m)}$$

$$= \frac{(e+fx)^{1+m}\left(a+b\cot^{-1}(c+dx)\right)}{f(1+m)} + \frac{ibd(e+fx)^{2+m}\,{}_2F_1\left(1,2+m;3+m;\right.}{2f(de+(i-c)f)(1+m)(2+}$$

Mathematica [A] time = 0.36, size = 162, normalized size = 0.92

$$\frac{(e+fx)^{m+1}\left(2\left(a+b\cot^{-1}(c+dx)\right)+\frac{bd(e+fx)\left((de-(c+i)f)\,{}_2F_1\left(1,m+2;m+3;\frac{d(e+fx)}{de-(c-i)f}\right)+(-de+(c-i)f)\,{}_2F_1\left(1,m+2;m+3;\frac{d(e+fx)}{de-(c+i)f}\right)\right)}{(m+2)(icf-ide+f)(de-(c+i)f)}\right)}{2f(m+1)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(e + f*x)^m*(a + b*ArcCot[c + d*x]),x]
```

```
[Out] ((e + f*x)^(1 + m)*(2*(a + b*ArcCot[c + d*x]) + (b*d*(e + f*x)*((d*e - (I +
 c)*f)*Hypergeometric2F1[1, 2 + m, 3 + m, (d*(e + f*x))/(d*e - (-I + c)*f)]
 + (-(d*e) + (-I + c)*f)*Hypergeometric2F1[1, 2 + m, 3 + m, (d*(e + f*x))/(
d*e - (I + c)*f)]))/(((-I)*d*e + f + I*c*f)*(d*e - (I + c)*f)*(2 + m))))/(2
*f*(1 + m))
```

fricas [F] time = 0.58, size = 0, normalized size = 0.00

$$\text{integral}\left((b\,\text{arccot}\,(dx+c)+a)\left(fx+e\right)^m, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^m*(a+b*arccot(d*x+c)),x, algorithm="fricas")
```

```
[Out] integral((b*arccot(d*x + c) + a)*(f*x + e)^m, x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (b\,\text{arccot}\,(dx+c)+a)\left(fx+e\right)^m dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^m*(a+b*arccot(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate((b*arccot(d*x + c) + a)*(f*x + e)^m, x)
```

maple [F] time = 2.11, size = 0, normalized size = 0.00

$$\int \left(fx+e\right)^{m} \left(a+b\,\mathrm{arccot}\left(dx+c\right)\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^m*(a+b*arccot(d*x+c)),x)
```

```
[Out] int((f*x+e)^m*(a+b*arccot(d*x+c)),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\frac{1}{2}\left(3\left(fx\arctan\left(1,dx+c\right)+e\arctan\left(1,dx+c\right)\right)\left(fx+e\right)^{m}+2\left(fm+f\right)\int\frac{\left(\left(c^{2}\arctan(1,dx+c)+\arctan(1,dx+c)\right)fm+\left(d^{2}\right.\right.}{}\right.}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^m*(a+b*arccot(d*x+c)),x, algorithm="maxima")
```

```
[Out] 1/2*((f*x*arctan2(1, d*x + c) + e*arctan2(1, d*x + c))*(f*x + e)^m + 2*(f*m
 + f)*integrate(1/2*((c^2*arctan2(1, d*x + c) + arctan2(1, d*x + c))*f*m +
(d^2*f*m*arctan2(1, d*x + c) + d^2*f*arctan2(1, d*x + c))*x^2 + d*e + (c^2*
arctan2(1, d*x + c) + arctan2(1, d*x + c))*f + (2*c*d*f*m*arctan2(1, d*x +
c) + (2*c*arctan2(1, d*x + c) + 1)*d*f)*x)*(f*x + e)^m/((c^2 + 1)*f*m + (d^
2*f*m + d^2*f)*x^2 + (c^2 + 1)*f + 2*(c*d*f*m + c*d*f)*x), x))*b/(f*m + f)
+ (f*x + e)^(m + 1)*a/(f*(m + 1))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int {\left(e+f\,x\right)}^m\,\left(a+b\,\mathrm{acot}\left(c+d\,x\right)\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e + f*x)^m*(a + b*acot(c + d*x)),x)
```

```
[Out] int((e + f*x)^m*(a + b*acot(c + d*x)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**m*(a+b*acot(d*x+c)),x)
```

```
[Out] Timed out
```

3.147 $\int (e+fx)^m \left(a+b\cot^{-1}(c+dx)\right)^2 dx$

Optimal. Leaf size=23

$$\text{Int}\left((e+fx)^m\left(a+b\cot^{-1}(c+dx)\right)^2,x\right)$$

```
[Out] Unintegrable((f*x+e)^m*(a+b*arccot(d*x+c))^2,x)
```

Rubi [A] time = 0.06, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int (e+fx)^m\left(a+b\cot^{-1}(c+dx)\right)^2\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(e + f*x)^m*(a + b*ArcCot[c + d*x])^2,x]
```

```
[Out] Defer[Subst][Defer[Int][((d*e - c*f)/d + (f*x)/d)^m*(a + b*ArcCot[x])^2, x]
, x, c + d*x]/d
```

Rubi steps

$$\int (e+fx)^m\left(a+b\cot^{-1}(c+dx)\right)^2\,dx=\frac{\text{Subst}\left(\int\left(\frac{de-cf}{d}+\frac{fx}{d}\right)^m\left(a+b\cot^{-1}(x)\right)^2\,dx,x,c+dx\right)}{d}$$

Mathematica [A] time = 5.44, size = 0, normalized size = 0.00

$$\int (e+fx)^m\left(a+b\cot^{-1}(c+dx)\right)^2\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(e + f*x)^m*(a + b*ArcCot[c + d*x])^2,x]
```

```
[Out] Integrate[(e + f*x)^m*(a + b*ArcCot[c + d*x])^2, x]
```

fricas [A] time = 0.77, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(b^2\,\text{arccot}\left(dx+c\right)^2+2\,ab\,\text{arccot}\left(dx+c\right)+a^2\right)\left(fx+e\right)^m,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^m*(a+b*arccot(d*x+c))^2,x, algorithm="fricas")
```

```
[Out] integral((b^2*arccot(d*x + c)^2 + 2*a*b*arccot(d*x + c) + a^2)*(f*x + e)^m,
 x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int\left(b\,\text{arccot}\left(dx+c\right)+a\right)^2\left(fx+e\right)^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^m*(a+b*arccot(d*x+c))^2,x, algorithm="giac")
```

```
[Out] integrate((b*arccot(d*x + c) + a)^2*(f*x + e)^m, x)
```

maple [A] time = 1.89, size = 0, normalized size = 0.00

$$\int \left(fx+e\right)^{m} \left(a+b\,\mathrm{arccot}\left(dx+c\right)\right)^{2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^m*(a+b*arccot(d*x+c))^2,x)
```

```
[Out] int((f*x+e)^m*(a+b*arccot(d*x+c))^2,x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\left(fx+e\right)^{m+1}a^{2}}{f(m+1)} - \frac{\frac{3}{4}\left(b^{2}fx+b^{2}e\right)\left(fx+e\right)^{m}\log\left(d^{2}x^{2}+2\,cdx+c^{2}+1\right)^{2} - 7\left(b^{2}fx\arctan\left(1,dx+c\right)^{2}+b^{2}e\,\mathrm{arcta}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^m*(a+b*arccot(d*x+c))^2,x, algorithm="maxima")
```

```
[Out] (f*x + e)^(m + 1)*a^2/(f*(m + 1)) - 1/16*((b^2*f*x + b^2*e)*(f*x + e)^m*log
(d^2*x^2 + 2*c*d*x + c^2 + 1)^2 - 4*(b^2*f*x*arctan2(1, d*x + c)^2 + b^2*e*
arctan2(1, d*x + c)^2)*(f*x + e)^m - 16*(f*m + f)*integrate(1/16*(((b^2*c^2
 + b^2)*f*m + (b^2*d^2*f*m + b^2*d^2*f)*x^2 + (b^2*c^2 + b^2)*f + 2*(b^2*c*
d*f*m + b^2*c*d*f)*x)*(f*x + e)^m*log(d^2*x^2 + 2*c*d*x + c^2 + 1)^2 + 4*(b
^2*d^2*f*x^2 + b^2*c*d*e + (b^2*d^2*e + b^2*c*d*f)*x)*(f*x + e)^m*log(d^2*x
^2 + 2*c*d*x + c^2 + 1) + 4*(2*b^2*d*e*arctan2(1, d*x + c) + (3*b^2*arctan2
(1, d*x + c)^2 + (3*b^2*arctan2(1, d*x + c)^2 + 8*a*b*arctan2(1, d*x + c))*
c^2 + 8*a*b*arctan2(1, d*x + c))*f*m + ((3*b^2*arctan2(1, d*x + c)^2 + 8*a*
b*arctan2(1, d*x + c))*d^2*f*m + (3*b^2*arctan2(1, d*x + c)^2 + 8*a*b*arcta
n2(1, d*x + c))*d^2*f)*x^2 + (3*b^2*arctan2(1, d*x + c)^2 + (3*b^2*arctan2(
1, d*x + c)^2 + 8*a*b*arctan2(1, d*x + c))*c^2 + 8*a*b*arctan2(1, d*x + c))
*f + 2*((3*b^2*arctan2(1, d*x + c)^2 + 8*a*b*arctan2(1, d*x + c))*c*d*f*m +
 (b^2*arctan2(1, d*x + c) + (3*b^2*arctan2(1, d*x + c)^2 + 8*a*b*arctan2(1,
 d*x + c))*c)*d*f)*x)*(f*x + e)^m)/((c^2 + 1)*f*m + (d^2*f*m + d^2*f)*x^2 +
 (c^2 + 1)*f + 2*(c*d*f*m + c*d*f)*x), x))/(f*m + f)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.04

$$\int {\left(e+f\,x\right)}^m\,{\left(a+b\,\mathrm{acot}\left(c+d\,x\right)\right)}^2 \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e + f*x)^m*(a + b*acot(c + d*x))^2,x)
```

```
[Out] int((e + f*x)^m*(a + b*acot(c + d*x))^2, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**m*(a+b*acot(d*x+c))**2,x)
```

```
[Out] Timed out
```

3.148 $\int (e+fx)^m \left(a+b\cot^{-1}(c+dx)\right)^3 \, dx$

Optimal. Leaf size=23

$$\text{Int}\left((e+fx)^m \left(a+b\cot^{-1}(c+dx)\right)^3, x\right)$$

```
[Out] Unintegrable((f*x+e)^m*(a+b*arccot(d*x+c))^3,x)
```

Rubi [A] time = 0.06, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int (e+fx)^m \left(a+b\cot^{-1}(c+dx)\right)^3 \, dx$$

Verification is Not applicable to the result.

```
[In] Int[(e + f*x)^m*(a + b*ArcCot[c + d*x])^3,x]
```

```
[Out] Defer[Subst][Defer[Int][((d*e - c*f)/d + (f*x)/d)^m*(a + b*ArcCot[x])^3, x]
, x, c + d*x]/d
```

Rubi steps

$$\int (e+fx)^m \left(a+b\cot^{-1}(c+dx)\right)^3 \, dx = \frac{\text{Subst}\left(\int \left(\frac{de-cf}{d}+\frac{fx}{d}\right)^m \left(a+b\cot^{-1}(x)\right)^3 \, dx, x, c+dx\right)}{d}$$

Mathematica [A] time = 0.49, size = 0, normalized size = 0.00

$$\int (e+fx)^m \left(a+b\cot^{-1}(c+dx)\right)^3 \, dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(e + f*x)^m*(a + b*ArcCot[c + d*x])^3,x]
```

```
[Out] Integrate[(e + f*x)^m*(a + b*ArcCot[c + d*x])^3, x]
```

fricas [A] time = 0.54, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(b^3 \operatorname{arccot}(dx+c)^3 + 3\,ab^2 \operatorname{arccot}(dx+c)^2 + 3\,a^2 b \operatorname{arccot}(dx+c) + a^3\right)\left(fx+e\right)^m, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^m*(a+b*arccot(d*x+c))^3,x, algorithm="fricas")
```

```
[Out] integral((b^3*arccot(d*x + c)^3 + 3*a*b^2*arccot(d*x + c)^2 + 3*a^2*b*arcco
t(d*x + c) + a^3)*(f*x + e)^m, x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int (b \operatorname{arccot}(dx+c)+a)^3 \left(fx+e\right)^m \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^m*(a+b*arccot(d*x+c))^3,x, algorithm="giac")
```

```
[Out] integrate((b*arccot(d*x + c) + a)^3*(f*x + e)^m, x)
```

maple [A] time = 2.04, size = 0, normalized size = 0.00

$$\int \left(fx+e\right)^{m} \left(a+b\,\mathrm{arccot}\left(dx+c\right)\right)^{3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^m*(a+b*arccot(d*x+c))^3,x)
```

```
[Out] int((f*x+e)^m*(a+b*arccot(d*x+c))^3,x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^m*(a+b*arccot(d*x+c))^3,x, algorithm="maxima")
```

```
[Out] (f*x + e)^(m + 1)*a^3/(f*(m + 1)) - 1/32*(3*(b^3*f*x*arctan2(1, d*x + c) +
b^3*e*arctan2(1, d*x + c))*(f*x + e)^m*log(d^2*x^2 + 2*c*d*x + c^2 + 1)^2 -
 4*(b^3*f*x*arctan2(1, d*x + c)^3 + b^3*e*arctan2(1, d*x + c)^3)*(f*x + e)^
m - 32*(f*m + f)*integrate(-1/32*(3*(b^3*d*e - (b^3*c^2*arctan2(1, d*x + c)
 + b^3*arctan2(1, d*x + c))*f*m - (b^3*d^2*f*m*arctan2(1, d*x + c) + b^3*d^
2*f*arctan2(1, d*x + c))*x^2 - (b^3*c^2*arctan2(1, d*x + c) + b^3*arctan2(1
, d*x + c))*f - (2*b^3*c*d*f*m*arctan2(1, d*x + c) + (2*b^3*c*arctan2(1, d*
x + c) - b^3)*d*f)*x)*(f*x + e)^m*log(d^2*x^2 + 2*c*d*x + c^2 + 1)^2 - 12*(
b^3*d^2*f*x^2*arctan2(1, d*x + c) + b^3*c*d*e*arctan2(1, d*x + c) + (b^3*d^
2*e*arctan2(1, d*x + c) + b^3*c*d*f*arctan2(1, d*x + c))*x)*(f*x + e)^m*log
(d^2*x^2 + 2*c*d*x + c^2 + 1) - 4*(3*b^3*d*e*arctan2(1, d*x + c)^2 + (7*b^3
*arctan2(1, d*x + c)^3 + 24*a*b^2*arctan2(1, d*x + c)^2 + 24*a^2*b*arctan2(
1, d*x + c) + (7*b^3*arctan2(1, d*x + c)^3 + 24*a*b^2*arctan2(1, d*x + c)^2
 + 24*a^2*b*arctan2(1, d*x + c))*c^2)*f*m + ((7*b^3*arctan2(1, d*x + c)^3 +
 24*a*b^2*arctan2(1, d*x + c)^2 + 24*a^2*b*arctan2(1, d*x + c))*d^2*f*m + (
7*b^3*arctan2(1, d*x + c)^3 + 24*a*b^2*arctan2(1, d*x + c)^2 + 24*a^2*b*arc
tan2(1, d*x + c))*d^2*f)*x^2 + (7*b^3*arctan2(1, d*x + c)^3 + 24*a*b^2*arct
an2(1, d*x + c)^2 + 24*a^2*b*arctan2(1, d*x + c) + (7*b^3*arctan2(1, d*x +
c)^3 + 24*a*b^2*arctan2(1, d*x + c)^2 + 24*a^2*b*arctan2(1, d*x + c))*c^2)*
f + (2*(7*b^3*arctan2(1, d*x + c)^3 + 24*a*b^2*arctan2(1, d*x + c)^2 + 24*a
^2*b*arctan2(1, d*x + c))*c*d*f*m + (3*b^3*arctan2(1, d*x + c)^2 + 2*(7*b^3
*arctan2(1, d*x + c)^3 + 24*a*b^2*arctan2(1, d*x + c)^2 + 24*a^2*b*arctan2(
1, d*x + c))*c)*d*f)*x)*(f*x + e)^m)/((c^2 + 1)*f*m + (d^2*f*m + d^2*f)*x^2
 + (c^2 + 1)*f + 2*(c*d*f*m + c*d*f)*x), x))/(f*m + f)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.04

$$\int {\left(e+f\,x\right)}^m\,{\left(a+b\,\mathrm{acot}\left(c+d\,x\right)\right)}^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e + f*x)^m*(a + b*acot(c + d*x))^3,x)
```

```
[Out] int((e + f*x)^m*(a + b*acot(c + d*x))^3, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**m*(a+b*acot(d*x+c))**3,x)
```

```
[Out] Timed out
```

3.149 $\int x^3 \cot^{-1}\left(a+bx^4\right) dx$

Optimal. Leaf size=42

$$\frac{\log\left(\left(a+bx^4\right)^2+1\right)}{8b}+\frac{\left(a+bx^4\right)\cot^{-1}\left(a+bx^4\right)}{4b}$$

```
[Out] 1/4*(b*x^4+a)*arccot(b*x^4+a)/b+1/8*ln(1+(b*x^4+a)^2)/b
```

Rubi [A] time = 0.04, antiderivative size = 42, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333, Rules used = {6715, 5040, 4847, 260}

$$\frac{\log\left(\left(a+bx^4\right)^2+1\right)}{8b}+\frac{\left(a+bx^4\right)\cot^{-1}\left(a+bx^4\right)}{4b}$$

Antiderivative was successfully verified.

```
[In] Int[x^3*ArcCot[a + b*x^4],x]
```

```
[Out] ((a + b*x^4)*ArcCot[a + b*x^4])/(4*b) + Log[1 + (a + b*x^4)^2]/(8*b)
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 4847

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b*Ar
cCot[c*x])^p, x] + Dist[b*c*p, Int[(x*(a + b*ArcCot[c*x])^(p - 1))/(1 + c^2
*x^2), x], x] /; FreeQ[{a, b, c}, x] && IGtQ[p, 0]
```

Rule 5040

```
Int[((a_.) + ArcCot[(c_) + (d_.)*(x_)]*(b_.))^(p_.), x_Symbol] :> Dist[1/d,
 Subst[Int[(a + b*ArcCot[x])^p, x], x, c + d*x], x] /; FreeQ[{a, b, c, d},
x] && IGtQ[p, 0]
```

Rule 6715

```
Int[(u_)*(x_)^(m_.), x_Symbol] :> Dist[1/(m + 1), Subst[Int[SubstFor[x^(m +
 1), u, x], x], x, x^(m + 1)], x] /; FreeQ[m, x] && NeQ[m, -1] && FunctionO
fQ[x^(m + 1), u, x]
```

Rubi steps

$$\begin{aligned}\int x^3 \cot^{-1}\left(a+bx^4\right) dx &= \frac{1}{4}\text{Subst}\left(\int \cot^{-1}(a+bx)\,dx, x, x^4\right)\\ &= \frac{\text{Subst}\left(\int \cot^{-1}(x)\,dx, x, a+bx^4\right)}{4b}\\ &= \frac{\left(a+bx^4\right)\cot^{-1}\left(a+bx^4\right)}{4b}+\frac{\text{Subst}\left(\int \frac{x}{1+x^2}\,dx, x, a+bx^4\right)}{4b}\\ &= \frac{\left(a+bx^4\right)\cot^{-1}\left(a+bx^4\right)}{4b}+\frac{\log\left(1+\left(a+bx^4\right)^2\right)}{8b}\end{aligned}$$

Mathematica [A] time = 0.02, size = 37, normalized size = 0.88

$$\frac{\log\left(\left(a+bx^4\right)^2+1\right)+2\left(a+bx^4\right)\cot^{-1}\left(a+bx^4\right)}{8b}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^3*ArcCot[a + b*x^4],x]
```

```
[Out] (2*(a + b*x^4)*ArcCot[a + b*x^4] + Log[1 + (a + b*x^4)^2])/(8*b)
```

fricas [A] time = 0.68, size = 51, normalized size = 1.21

$$\frac{2\,bx^4\,\mathrm{arccot}\left(bx^4+a\right)-2\,a\arctan\left(bx^4+a\right)+\log\left(b^2x^8+2\,abx^4+a^2+1\right)}{8\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*arccot(b*x^4+a),x, algorithm="fricas")
```

```
[Out] 1/8*(2*b*x^4*arccot(b*x^4 + a) - 2*a*arctan(b*x^4 + a) + log(b^2*x^8 + 2*a*
b*x^4 + a^2 + 1))/b
```

giac [B] time = 0.23, size = 127, normalized size = 3.02

$$-\frac{\arctan\left(\frac{1}{bx^4+a}\right)\tan\left(\frac{1}{2}\arctan\left(\frac{1}{bx^4+a}\right)\right)^2+\log\left(\frac{16\tan\left(\frac{1}{2}\arctan\left(\frac{1}{bx^4+a}\right)\right)^2}{\tan\left(\frac{1}{2}\arctan\left(\frac{1}{bx^4+a}\right)\right)^4+2\tan\left(\frac{1}{2}\arctan\left(\frac{1}{bx^4+a}\right)\right)^2+1}\right)\tan\left(\frac{1}{2}\arctan\left(\frac{1}{bx^4-}\right.\right.}{8\,b\tan\left(\frac{1}{2}\arctan\left(\frac{1}{bx^4+a}\right)\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*arccot(b*x^4+a),x, algorithm="giac")
```

```
[Out] -1/8*(arctan(1/(b*x^4 + a))*tan(1/2*arctan(1/(b*x^4 + a)))^2 + log(16*tan(1
/2*arctan(1/(b*x^4 + a)))^2/(tan(1/2*arctan(1/(b*x^4 + a)))^4 + 2*tan(1/2*a
rctan(1/(b*x^4 + a)))^2 + 1))*tan(1/2*arctan(1/(b*x^4 + a))) - arctan(1/(b*
x^4 + a)))/(b*tan(1/2*arctan(1/(b*x^4 + a))))
```

maple [A] time = 0.04, size = 46, normalized size = 1.10

$$\frac{\mathrm{arccot}\left(b\,x^4+a\right)x^4}{4}+\frac{\mathrm{arccot}\left(b\,x^4+a\right)a}{4b}+\frac{\ln\left(1+\left(b\,x^4+a\right)^2\right)}{8b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*arccot(b*x^4+a),x)
```

```
[Out] 1/4*arccot(b*x^4+a)*x^4+1/4/b*arccot(b*x^4+a)*a+1/8*ln(1+(b*x^4+a)^2)/b
```

maxima [A] time = 0.32, size = 35, normalized size = 0.83

$$\frac{2\left(bx^4+a\right)\mathrm{arccot}\left(bx^4+a\right)+\log\left(\left(bx^4+a\right)^2+1\right)}{8\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*arccot(b*x^4+a),x, algorithm="maxima")
```

```
[Out] 1/8*(2*(b*x^4 + a)*arccot(b*x^4 + a) + log((b*x^4 + a)^2 + 1))/b
```

mupad [B] time = 0.76, size = 230, normalized size = 5.48

$$\frac{\ln\left(a^2+2\,a\,b\,x^4+b^2\,x^8+1\right)}{8\,b}+\frac{x^4\,\mathrm{acot}\left(b\,x^4+a\right)}{4}-\frac{a\,\mathrm{atan}\left(\frac{a}{a^6+3\,a^4+3\,a^2+1}+\frac{3\,a^3}{a^6+3\,a^4+3\,a^2+1}+\frac{3\,a^5}{a^6+3\,a^4+3\,a^2+1}+\frac{a^7}{a^6+3\,a^4+3\,a^2+1}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*acot(a + b*x^4),x)
```

```
[Out] log(a^2 + b^2*x^8 + 2*a*b*x^4 + 1)/(8*b) + (x^4*acot(a + b*x^4))/4 - (a*ata
n(a/(3*a^2 + 3*a^4 + a^6 + 1) + (3*a^3)/(3*a^2 + 3*a^4 + a^6 + 1) + (3*a^5)
/(3*a^2 + 3*a^4 + a^6 + 1) + a^7/(3*a^2 + 3*a^4 + a^6 + 1) + (b*x^4)/(3*a^2
 + 3*a^4 + a^6 + 1) + (3*a^2*b*x^4)/(3*a^2 + 3*a^4 + a^6 + 1) + (3*a^4*b*x^
4)/(3*a^2 + 3*a^4 + a^6 + 1) + (a^6*b*x^4)/(3*a^2 + 3*a^4 + a^6 + 1)))/(4*b
)
```

sympy [A] time = 3.34, size = 60, normalized size = 1.43

$$\begin{cases} \frac{a\,\mathrm{acot}\left(a+bx^4\right)}{4b}+\frac{x^4\,\mathrm{acot}\left(a+bx^4\right)}{4}+\frac{\log\left(a^2+2abx^4+b^2x^8+1\right)}{8b} & \text{for } b\neq 0 \\ \frac{x^4\,\mathrm{acot}\,(a)}{4} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*acot(b*x**4+a),x)
```

```
[Out] Piecewise((a*acot(a + b*x**4)/(4*b) + x**4*acot(a + b*x**4)/4 + log(a**2 +
2*a*b*x**4 + b**2*x**8 + 1)/(8*b), Ne(b, 0)), (x**4*acot(a)/4, True))
```

3.150 $\int x^{-1+n} \cot^{-1}(a+bx^n)\,dx$

Optimal. Leaf size=45

$$\frac{\log\left((a+bx^n)^2+1\right)}{2bn}+\frac{(a+bx^n)\cot^{-1}(a+bx^n)}{bn}$$

```
[Out] (a+b*x^n)*arccot(a+b*x^n)/b/n+1/2*ln(1+(a+b*x^n)^2)/b/n
```

Rubi [A] time = 0.04, antiderivative size = 45, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.286, Rules used = {6715, 5040, 4847, 260}

$$\frac{\log\left((a+bx^n)^2+1\right)}{2bn}+\frac{(a+bx^n)\cot^{-1}(a+bx^n)}{bn}$$

Antiderivative was successfully verified.

```
[In] Int[x^(-1 + n)*ArcCot[a + b*x^n],x]
```

```
[Out] ((a + b*x^n)*ArcCot[a + b*x^n])/(b*n) + Log[1 + (a + b*x^n)^2]/(2*b*n)
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 4847

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.), x_Symbol] :> Simp[x*(a + b*Ar
cCot[c*x])^p, x] + Dist[b*c*p, Int[(x*(a + b*ArcCot[c*x])^(p - 1))/(1 + c^2
*x^2), x], x] /; FreeQ[{a, b, c}, x] && IGtQ[p, 0]
```

Rule 5040

```
Int[((a_.) + ArcCot[(c_) + (d_.)*(x_)]*(b_.))^(p_.), x_Symbol] :> Dist[1/d,
 Subst[Int[(a + b*ArcCot[x])^p, x], x, c + d*x], x] /; FreeQ[{a, b, c, d},
x] && IGtQ[p, 0]
```

Rule 6715

```
Int[(u_)*(x_)^(m_.), x_Symbol] :> Dist[1/(m + 1), Subst[Int[SubstFor[x^(m +
 1), u, x], x], x, x^(m + 1)], x] /; FreeQ[m, x] && NeQ[m, -1] && FunctionO
fQ[x^(m + 1), u, x]
```

Rubi steps

$$\begin{aligned}\int x^{-1+n}\cot^{-1}(a+bx^n)\,dx &= \frac{\text{Subst}\left(\int \cot^{-1}(a+bx)\,dx,x,x^n\right)}{n}\\ &= \frac{\text{Subst}\left(\int \cot^{-1}(x)\,dx,x,a+bx^n\right)}{bn}\\ &= \frac{(a+bx^n)\cot^{-1}(a+bx^n)}{bn}+\frac{\text{Subst}\left(\int \frac{x}{1+x^2}\,dx,x,a+bx^n\right)}{bn}\\ &= \frac{(a+bx^n)\cot^{-1}(a+bx^n)}{bn}+\frac{\log\left(1+(a+bx^n)^2\right)}{2bn}\end{aligned}$$

Mathematica [A] time = 0.04, size = 40, normalized size = 0.89

$$\frac{\log\left((a+bx^n)^2+1\right)+2(a+bx^n)\cot^{-1}(a+bx^n)}{2bn}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(-1 + n)*ArcCot[a + b*x^n],x]
```

```
[Out] (2*(a + b*x^n)*ArcCot[a + b*x^n] + Log[1 + (a + b*x^n)^2])/(2*b*n)
```

fricas [A] time = 0.61, size = 56, normalized size = 1.24

$$\frac{2\,bx^n\,\mathrm{arccot}\,(bx^n+a)-2\,a\arctan\,(bx^n+a)+\log\left(b^2x^{2\,n}+2\,abx^n+a^2+1\right)}{2\,bn}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(-1+n)*arccot(a+b*x^n),x, algorithm="fricas")
```

```
[Out] 1/2*(2*b*x^n*arccot(b*x^n + a) - 2*a*arctan(b*x^n + a) + log(b^2*x^(2*n) +
2*a*b*x^n + a^2 + 1))/(b*n)
```

giac [A] time = 0.38, size = 60, normalized size = 1.33

$$\frac{b\left(\frac{2\,(bx^n+a)\arctan\left(\frac{1}{bx^n+a}\right)}{b^2}+\frac{\log\left(\frac{1}{(bx^n+a)^2}+1\right)}{b^2}-\frac{\log\left(\frac{1}{(bx^n+a)^2}\right)}{b^2}\right)}{2\,n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(-1+n)*arccot(a+b*x^n),x, algorithm="giac")
```

```
[Out] 1/2*b*(2*(b*x^n + a)*arctan(1/(b*x^n + a))/b^2 + log(1/(b*x^n + a)^2 + 1)/b
^2 - log((b*x^n + a)^(-2))/b^2)/n
```

maple [C] time = 0.44, size = 149, normalized size = 3.31

$$\frac{ix^n\ln\left(1+i\left(a+b\,x^n\right)\right)}{2n}-\frac{ix^n\ln\left(1-i\left(a+b\,x^n\right)\right)}{2n}+\frac{i\ln\left(x^n-\frac{i-a}{b}\right)a}{2bn}-\frac{i\ln\left(\frac{i+a}{b}+x^n\right)a}{2bn}+\frac{\pi\,x^n}{2n}+\frac{\ln\left(x^n-\frac{i-a}{b}\right)}{2bn}+\frac{\ln\left(\frac{i+a}{b}\right.}{2b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(n-1)*arccot(a+b*x^n),x)
```

```
[Out] 1/2*I/n*x^n*ln(1+I*(a+b*x^n))-1/2*I/n*x^n*ln(1-I*(a+b*x^n))+1/2*I/b/n*ln(x^
n-(I-a)/b)*a-1/2*I/b/n*ln((I+a)/b+x^n)*a+1/2/n*Pi*x^n+1/2/b/n*ln(x^n-(I-a)/
b)+1/2/b/n*ln((I+a)/b+x^n)
```

maxima [A] time = 0.32, size = 38, normalized size = 0.84

$$\frac{2\,(bx^n+a)\,\mathrm{arccot}\,(bx^n+a)+\log\left((bx^n+a)^2+1\right)}{2\,bn}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(-1+n)*arccot(a+b*x^n),x, algorithm="maxima")
```

```
[Out] 1/2*(2*(b*x^n + a)*arccot(b*x^n + a) + log((b*x^n + a)^2 + 1))/(b*n)
```

mupad [B] time = 1.38, size = 58, normalized size = 1.29

$$\frac{\frac{\ln\left(a^2+b^2\,x^{2\,n}+2\,a\,b\,x^n+1\right)}{2}+a\,\mathrm{acot}\left(a+b\,x^n\right)}{b\,n}+\frac{x^n\,\mathrm{acot}\left(a+b\,x^n\right)}{n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(n - 1)*acot(a + b*x^n),x)
```

```
[Out] (log(a^2 + b^2*x^(2*n) + 2*a*b*x^n + 1)/2 + a*acot(a + b*x^n))/(b*n) + (x^n
*acot(a + b*x^n))/n
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(-1+n)*acot(a+b*x**n),x)
```

```
[Out] Timed out
```

3.151 $\int \frac{\left(a+b\cot^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)^n}{1-c^2x^2}\,dx$

Optimal. Leaf size=43

$$\text{Int}\left(\frac{\left(a+b\cot^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{cx+1}}\right)\right)^n}{1-c^2x^2},x\right)$$

```
[Out] Unintegrable((a+b*arccot((-c*x+1)^(1/2)/(c*x+1)^(1/2)))^n/(-c^2*x^2+1),x)
```

Rubi [A] time = 0.05, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\left(a+b\cot^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)^n}{1-c^2x^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[(a + b*ArcCot[Sqrt[1 - c*x]/Sqrt[1 + c*x]])^n/(1 - c^2*x^2),x]
[Out] Defer[Int][(a + b*ArcCot[Sqrt[1 - c*x]/Sqrt[1 + c*x]])^n/(1 - c^2*x^2), x]
```

Rubi steps

$$\int \frac{\left(a+b\cot^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)^n}{1-c^2x^2}\,dx = \int \frac{\left(a+b\cot^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)^n}{1-c^2x^2}\,dx$$

Mathematica [A] time = 0.09, size = 0, normalized size = 0.00

$$\int \frac{\left(a+b\cot^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)^n}{1-c^2x^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(a + b*ArcCot[Sqrt[1 - c*x]/Sqrt[1 + c*x]])^n/(1 - c^2*x^2),x]
[Out] Integrate[(a + b*ArcCot[Sqrt[1 - c*x]/Sqrt[1 + c*x]])^n/(1 - c^2*x^2), x]
```

fricas [A] time = 0.62, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\left(b\,\text{arccot}\left(\frac{\sqrt{-cx+1}}{\sqrt{cx+1}}\right)+a\right)^n}{c^2x^2-1},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arccot((-c*x+1)^(1/2)/(c*x+1)^(1/2)))^n/(-c^2*x^2+1),x, algo
rithm="fricas")
[Out] integral(-(b*arccot(sqrt(-c*x + 1)/sqrt(c*x + 1)) + a)^n/(c^2*x^2 - 1), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int -\frac{\left(b\,\text{arccot}\left(\frac{\sqrt{-cx+1}}{\sqrt{cx+1}}\right)+a\right)^n}{c^2x^2-1}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arccot((-c*x+1)^(1/2)/(c*x+1)^(1/2)))^n/(-c^2*x^2+1),x, algo
rithm="giac")
```

```
[Out] integrate(-(b*arccot(sqrt(-c*x + 1)/sqrt(c*x + 1)) + a)^n/(c^2*x^2 - 1), x)
```

maple [A] time = 1.84, size = 0, normalized size = 0.00

$$\int \frac{\left(a + b\,\mathrm{arccot}\left(\frac{\sqrt{-cx+1}}{\sqrt{cx+1}}\right)\right)^n}{-c^2x^2+1}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arccot((-c*x+1)^(1/2)/(c*x+1)^(1/2)))^n/(-c^2*x^2+1),x)
```

```
[Out] int((a+b*arccot((-c*x+1)^(1/2)/(c*x+1)^(1/2)))^n/(-c^2*x^2+1),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{\left(b\,\mathrm{arccot}\left(\frac{\sqrt{-cx+1}}{\sqrt{cx+1}}\right) + a\right)^n}{c^2x^2-1}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arccot((-c*x+1)^(1/2)/(c*x+1)^(1/2)))^n/(-c^2*x^2+1),x, algo
rithm="maxima")
```

```
[Out] -integrate((b*arccot(sqrt(-c*x + 1)/sqrt(c*x + 1)) + a)^n/(c^2*x^2 - 1), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.02

$$-\int \frac{\left(a + b\,\mathrm{acot}\left(\frac{\sqrt{1-c\,x}}{\sqrt{c\,x+1}}\right)\right)^n}{c^2\,x^2-1}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(a + b*acot((1 - c*x)^(1/2)/(c*x + 1)^(1/2)))^n/(c^2*x^2 - 1),x)
```

```
[Out] -int((a + b*acot((1 - c*x)^(1/2)/(c*x + 1)^(1/2)))^n/(c^2*x^2 - 1), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{\left(a + b\,\mathrm{acot}\left(\frac{\sqrt{-cx+1}}{\sqrt{cx+1}}\right)\right)^n}{c^2x^2-1}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*acot((-c*x+1)**(1/2)/(c*x+1)**(1/2)))**n/(-c**2*x**2+1),x)
```

```
[Out] -Integral((a + b*acot(sqrt(-c*x + 1)/sqrt(c*x + 1)))**n/(c**2*x**2 - 1), x)
```

3.152 $\int \frac{\left(a+b\cot^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)^3}{1-c^2x^2}\,dx$

Optimal. Leaf size=488

$$\frac{3b^2\text{Li}_3\left(1-\frac{2i}{\frac{\sqrt{1-cx}}{\sqrt{cx+1}}+i}\right)\left(a+b\cot^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{cx+1}}\right)\right)}{2c}-\frac{3b^2\text{Li}_3\left(1-\frac{2\sqrt{1-cx}}{\sqrt{cx+1}\left(\frac{\sqrt{1-cx}}{\sqrt{cx+1}}+i\right)}\right)\left(a+b\cot^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{cx+1}}\right)\right)}{2c}+\frac{3ib\text{Li}_2\left(1-\frac{2i}{\frac{\sqrt{1-cx}}{\sqrt{cx+1}}}\right.}{}$$

```
[Out] -2*(a+b*arccot((-c*x+1)^(1/2)/(c*x+1)^(1/2)))^3*arccoth(1-2/(1+I*(-c*x+1)^(
1/2)/(c*x+1)^(1/2)))/c+3/2*I*b*(a+b*arccot((-c*x+1)^(1/2)/(c*x+1)^(1/2)))^2
*polylog(2,1-2*I/(I+(-c*x+1)^(1/2)/(c*x+1)^(1/2)))/c-3/2*I*b*(a+b*arccot((-
c*x+1)^(1/2)/(c*x+1)^(1/2)))^2*polylog(2,1-2*(-c*x+1)^(1/2)/(I+(-c*x+1)^(1/
2)/(c*x+1)^(1/2))/(c*x+1)^(1/2))/c+3/2*b^2*(a+b*arccot((-c*x+1)^(1/2)/(c*x+
1)^(1/2)))*polylog(3,1-2*I/(I+(-c*x+1)^(1/2)/(c*x+1)^(1/2)))/c-3/2*b^2*(a+b
*arccot((-c*x+1)^(1/2)/(c*x+1)^(1/2)))*polylog(3,1-2*(-c*x+1)^(1/2)/(I+(-c*
x+1)^(1/2)/(c*x+1)^(1/2))/(c*x+1)^(1/2))/c-3/4*I*b^3*polylog(4,1-2*I/(I+(-c
*x+1)^(1/2)/(c*x+1)^(1/2)))/c+3/4*I*b^3*polylog(4,1-2*(-c*x+1)^(1/2)/(I+(-c
*x+1)^(1/2)/(c*x+1)^(1/2))/(c*x+1)^(1/2))/c
```

Rubi [A] time = 0.52, antiderivative size = 488, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 7, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.175, Rules used = {6681, 4851, 4989, 4885, 4993, 4997, 6610}

$$\frac{3b^2\text{PolyLog}\left(3,1-\frac{2i}{\frac{\sqrt{1-cx}}{\sqrt{cx+1}}+i}\right)\left(a+b\cot^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{cx+1}}\right)\right)}{2c}-\frac{3b^2\text{PolyLog}\left(3,1-\frac{2\sqrt{1-cx}}{\sqrt{cx+1}\left(\frac{\sqrt{1-cx}}{\sqrt{cx+1}}+i\right)}\right)\left(a+b\cot^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{cx+1}}\right)\right)}{2c}+$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcCot[Sqrt[1 - c*x]/Sqrt[1 + c*x]])^3/(1 - c^2*x^2),x]
```

```
[Out] (-2*(a + b*ArcCot[Sqrt[1 - c*x]/Sqrt[1 + c*x]])^3*ArcCoth[1 - 2/(1 + (I*Sqr
t[1 - c*x])/Sqrt[1 + c*x])])/c + (((3*I)/2)*b*(a + b*ArcCot[Sqrt[1 - c*x]/S
qrt[1 + c*x]])^2*PolyLog[2, 1 - (2*I)/(I + Sqrt[1 - c*x]/Sqrt[1 + c*x])])/c
 - (((3*I)/2)*b*(a + b*ArcCot[Sqrt[1 - c*x]/Sqrt[1 + c*x]])^2*PolyLog[2, 1
- (2*Sqrt[1 - c*x])/(Sqrt[1 + c*x]*(I + Sqrt[1 - c*x]/Sqrt[1 + c*x]))])/c +
 (3*b^2*(a + b*ArcCot[Sqrt[1 - c*x]/Sqrt[1 + c*x]])*PolyLog[3, 1 - (2*I)/(I
 + Sqrt[1 - c*x]/Sqrt[1 + c*x])])/(2*c) - (3*b^2*(a + b*ArcCot[Sqrt[1 - c*x
]/Sqrt[1 + c*x]])*PolyLog[3, 1 - (2*Sqrt[1 - c*x])/(Sqrt[1 + c*x]*(I + Sqrt
[1 - c*x]/Sqrt[1 + c*x]))])/(2*c) - (((3*I)/4)*b^3*PolyLog[4, 1 - (2*I)/(I
+ Sqrt[1 - c*x]/Sqrt[1 + c*x])])/c + (((3*I)/4)*b^3*PolyLog[4, 1 - (2*Sqrt[
1 - c*x])/(Sqrt[1 + c*x]*(I + Sqrt[1 - c*x]/Sqrt[1 + c*x]))])/c
```

Rule 4851

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_)/(x_), x_Symbol] :> Simp[2*(a +
b*ArcCot[c*x])^p*ArcCoth[1 - 2/(1 + I*c*x)], x] + Dist[2*b*c*p, Int[((a + b
*ArcCot[c*x])^(p - 1)*ArcCoth[1 - 2/(1 + I*c*x)])/(1 + c^2*x^2), x], x] /;
FreeQ[{a, b, c}, x] && IGtQ[p, 1]
```

Rule 4885

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)^2), x_Symbo
l] :> -Simp[(a + b*ArcCot[c*x])^(p + 1)/(b*c*d*(p + 1)), x] /; FreeQ[{a, b,
 c, d, e, p}, x] && EqQ[e, c^2*d] && NeQ[p, -1]
```

Rule 4989

```
Int[(ArcCoth[u_]*((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.))/((d_) + (e_.)*(x
_)^2), x_Symbol] :> Dist[1/2, Int[(Log[SimplifyIntegrand[1 + 1/u, x]]*(a +
b*ArcCot[c*x])^p)/(d + e*x^2), x], x] - Dist[1/2, Int[(Log[SimplifyIntegran
d[1 - 1/u, x]]*(a + b*ArcCot[c*x])^p)/(d + e*x^2), x], x] /; FreeQ[{a, b, c
, d, e}, x] && IGtQ[p, 0] && EqQ[e, c^2*d] && EqQ[u^2 - (1 - (2*I)/(I - c*x
))^2, 0]
```

Rule 4993

```
Int[(Log[u_]*((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.))/((d_) + (e_.)*(x_)^2
), x_Symbol] :> Simp[(I*(a + b*ArcCot[c*x])^p*PolyLog[2, 1 - u])/(2*c*d), x
] + Dist[(b*p*I)/2, Int[((a + b*ArcCot[c*x])^(p - 1)*PolyLog[2, 1 - u])/(d
+ e*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[p, 0] && EqQ[e, c^2*d
] && EqQ[(1 - u)^2 - (1 - (2*I)/(I + c*x))^2, 0]
```

Rule 4997

```
Int[(((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)*PolyLog[k_, u_])/((d_) + (e_.
)*(x_)^2), x_Symbol] :> -Simp[(I*(a + b*ArcCot[c*x])^p*PolyLog[k + 1, u])/(
2*c*d), x] - Dist[(b*p*I)/2, Int[((a + b*ArcCot[c*x])^(p - 1)*PolyLog[k + 1
, u])/(d + e*x^2), x], x] /; FreeQ[{a, b, c, d, e, k}, x] && IGtQ[p, 0] &&
EqQ[e, c^2*d] && EqQ[u^2 - (1 - (2*I)/(I + c*x))^2, 0]
```

Rule 6610

```
Int[(u_)*PolyLog[n_, v_], x_Symbol] :> With[{w = DerivativeDivides[v, u*v,
x]}, Simp[w*PolyLog[n + 1, v], x] /;  !FalseQ[w]] /; FreeQ[n, x]
```

Rule 6681

```
Int[((a_.) + (b_.)*(F_)[((c_.)*Sqrt[(d_.) + (e_.)*(x_)])/Sqrt[(f_.) + (g_.)
*(x_)]])^(n_.)/((A_.) + (C_.)*(x_)^2), x_Symbol] :> Dist[(2*e*g)/(C*(e*f -
d*g)), Subst[Int[(a + b*F[c*x])^n/x, x], x, Sqrt[d + e*x]/Sqrt[f + g*x]], x
] /; FreeQ[{a, b, c, d, e, f, g, A, C, F}, x] && EqQ[C*d*f - A*e*g, 0] && E
qQ[e*f + d*g, 0] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{\left(a+b\cot^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)^3}{1-c^2x^2}\,dx = -\frac{\text{Subst}\left(\int \frac{\left(a+b\cot^{-1}(x)\right)^3}{x}\,dx, x, \frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)}{c}$$

$$= -\frac{2\left(a+b\cot^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)^3\coth^{-1}\left(1-\frac{2}{1+\frac{i\sqrt{1-cx}}{\sqrt{1+cx}}}\right)}{c} - \frac{(6b)\,\text{Subst}\left(\int \frac{\left(a+b\cot^{-1}(x)\right)^2\coth}{1+x^2}\right.}{c}$$

$$= -\frac{2\left(a+b\cot^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)^3\coth^{-1}\left(1-\frac{2}{1+\frac{i\sqrt{1-cx}}{\sqrt{1+cx}}}\right)}{c} + \frac{(3b)\,\text{Subst}\left(\int \frac{\left(a+b\cot^{-1}(x)\right)^2\log(}{1+x^2}\right.}{c}$$

$$= -\frac{2\left(a+b\cot^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)^3\coth^{-1}\left(1-\frac{2}{1+\frac{i\sqrt{1-cx}}{\sqrt{1+cx}}}\right)}{c} + \frac{3ib\left(a+b\cot^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)^2\text{Li}_2}{2c}$$

$$= -\frac{2\left(a+b\cot^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)^3\coth^{-1}\left(1-\frac{2}{1+\frac{i\sqrt{1-cx}}{\sqrt{1+cx}}}\right)}{c} + \frac{3ib\left(a+b\cot^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)^2\text{Li}_2}{2c}$$

$$= -\frac{2\left(a+b\cot^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)^3\coth^{-1}\left(1-\frac{2}{1+\frac{i\sqrt{1-cx}}{\sqrt{1+cx}}}\right)}{c} + \frac{3ib\left(a+b\cot^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)^2\text{Li}_2}{2c}$$

Mathematica [F] time = 0.30, size = 0, normalized size = 0.00

$$\int \frac{\left(a+b\cot^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)^3}{1-c^2x^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(a + b*ArcCot[Sqrt[1 - c*x]/Sqrt[1 + c*x]])^3/(1 - c^2*x^2),x]
```

```
[Out] Integrate[(a + b*ArcCot[Sqrt[1 - c*x]/Sqrt[1 + c*x]])^3/(1 - c^2*x^2), x]
```

fricas [F] time = 0.54, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{b^3\,\text{arccot}\left(\frac{\sqrt{-cx+1}}{\sqrt{cx+1}}\right)^3 + 3\,ab^2\,\text{arccot}\left(\frac{\sqrt{-cx+1}}{\sqrt{cx+1}}\right)^2 + 3\,a^2b\,\text{arccot}\left(\frac{\sqrt{-cx+1}}{\sqrt{cx+1}}\right) + a^3}{c^2x^2-1}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arccot((-c*x+1)^(1/2)/(c*x+1)^(1/2)))^3/(-c^2*x^2+1),x, algo
rithm="fricas")
```

```
[Out] integral(-(b^3*arccot(sqrt(-c*x + 1)/sqrt(c*x + 1))^3 + 3*a*b^2*arccot(sqrt
(-c*x + 1)/sqrt(c*x + 1))^2 + 3*a^2*b*arccot(sqrt(-c*x + 1)/sqrt(c*x + 1))
+ a^3)/(c^2*x^2 - 1), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int -\frac{\left(b\,\text{arccot}\left(\frac{\sqrt{-cx+1}}{\sqrt{cx+1}}\right)+a\right)^3}{c^2x^2-1}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arccot((-c*x+1)^(1/2)/(c*x+1)^(1/2)))^3/(-c^2*x^2+1),x, algo
rithm="giac")
```

```
[Out] integrate(-(b*arccot(sqrt(-c*x + 1)/sqrt(c*x + 1)) + a)^3/(c^2*x^2 - 1), x)
```

maple [B] time = 2.36, size = 1605, normalized size = 3.29

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arccot((-c*x+1)^(1/2)/(c*x+1)^(1/2)))^3/(-c^2*x^2+1),x)
```

```
[Out] 3/2*I*a^2*b/c*dilog((I+(-c*x+1)^(1/2)/(c*x+1)^(1/2))^2/((-c*x+1)/(c*x+1)+1)
+1)-3/2*I*a^2*b/c*dilog(1-(I+(-c*x+1)^(1/2)/(c*x+1)^(1/2))^2/((-c*x+1)/(c*x
+1)+1))-3*a*b^2/c*arccot((-c*x+1)^(1/2)/(c*x+1)^(1/2))^2*ln((I+(-c*x+1)^(1/
2)/(c*x+1)^(1/2))^2/((-c*x+1)/(c*x+1)+1)+1)+3*a*b^2/c*arccot((-c*x+1)^(1/2)
/(c*x+1)^(1/2))^2*ln(1-(I+(-c*x+1)^(1/2)/(c*x+1)^(1/2))/((-c*x+1)/(c*x+1)+1
)^(1/2))-6*I*a*b^2/c*arccot((-c*x+1)^(1/2)/(c*x+1)^(1/2))*polylog(2,(I+(-c*
x+1)^(1/2)/(c*x+1)^(1/2))/((-c*x+1)/(c*x+1)+1)^(1/2))+3*I*a*b^2/c*arccot((-
c*x+1)^(1/2)/(c*x+1)^(1/2))*polylog(2,-(I+(-c*x+1)^(1/2)/(c*x+1)^(1/2))^2/(
(-c*x+1)/(c*x+1)+1))-6*I*a*b^2/c*arccot((-c*x+1)^(1/2)/(c*x+1)^(1/2))*polyl
og(2,-(I+(-c*x+1)^(1/2)/(c*x+1)^(1/2))/((-c*x+1)/(c*x+1)+1)^(1/2))-3*I*b^3/
c*arccot((-c*x+1)^(1/2)/(c*x+1)^(1/2))^2*polylog(2,-(I+(-c*x+1)^(1/2)/(c*x+
1)^(1/2))/((-c*x+1)/(c*x+1)+1)^(1/2))+3*a*b^2/c*arccot((-c*x+1)^(1/2)/(c*x+
1)^(1/2))^2*ln(1+(I+(-c*x+1)^(1/2)/(c*x+1)^(1/2))/((-c*x+1)/(c*x+1)+1)^(1/2
))+3*a^2*b/c*arccot((-c*x+1)^(1/2)/(c*x+1)^(1/2))*ln(1-(I+(-c*x+1)^(1/2)/(c
*x+1)^(1/2))^2/((-c*x+1)/(c*x+1)+1))-3*a^2*b/c*arccot((-c*x+1)^(1/2)/(c*x+1
)^(1/2))*ln((I+(-c*x+1)^(1/2)/(c*x+1)^(1/2))^2/((-c*x+1)/(c*x+1)+1)+1)-3*I*
b^3/c*arccot((-c*x+1)^(1/2)/(c*x+1)^(1/2))^2*polylog(2,(I+(-c*x+1)^(1/2)/(c
*x+1)^(1/2))/((-c*x+1)/(c*x+1)+1)^(1/2))+3/2*I*b^3/c*arccot((-c*x+1)^(1/2)/
(c*x+1)^(1/2))^2*polylog(2,-(I+(-c*x+1)^(1/2)/(c*x+1)^(1/2))^2/((-c*x+1)/(c
*x+1)+1))-1/2*a^3/c*ln(c*x-1)+1/2*a^3/c*ln(c*x+1)-3/2*a*b^2/c*polylog(3,-(I
+(-c*x+1)^(1/2)/(c*x+1)^(1/2))^2/((-c*x+1)/(c*x+1)+1))+6*a*b^2/c*polylog(3,
(I+(-c*x+1)^(1/2)/(c*x+1)^(1/2))/((-c*x+1)/(c*x+1)+1)^(1/2))+6*a*b^2/c*poly
log(3,-(I+(-c*x+1)^(1/2)/(c*x+1)^(1/2))/((-c*x+1)/(c*x+1)+1)^(1/2))-b^3/c*a
rccot((-c*x+1)^(1/2)/(c*x+1)^(1/2))^3*ln((I+(-c*x+1)^(1/2)/(c*x+1)^(1/2))^2
/((-c*x+1)/(c*x+1)+1)+1)-3/2*b^3/c*arccot((-c*x+1)^(1/2)/(c*x+1)^(1/2))*pol
ylog(3,-(I+(-c*x+1)^(1/2)/(c*x+1)^(1/2))^2/((-c*x+1)/(c*x+1)+1))+b^3/c*arcc
ot((-c*x+1)^(1/2)/(c*x+1)^(1/2))^3*ln(1-(I+(-c*x+1)^(1/2)/(c*x+1)^(1/2))/((
-c*x+1)/(c*x+1)+1)^(1/2))+6*b^3/c*arccot((-c*x+1)^(1/2)/(c*x+1)^(1/2))*poly
log(3,(I+(-c*x+1)^(1/2)/(c*x+1)^(1/2))/((-c*x+1)/(c*x+1)+1)^(1/2))+b^3/c*ar
ccot((-c*x+1)^(1/2)/(c*x+1)^(1/2))^3*ln(1+(I+(-c*x+1)^(1/2)/(c*x+1)^(1/2))/
((-c*x+1)/(c*x+1)+1)^(1/2))+6*b^3/c*arccot((-c*x+1)^(1/2)/(c*x+1)^(1/2))*po
lylog(3,-(I+(-c*x+1)^(1/2)/(c*x+1)^(1/2))/((-c*x+1)/(c*x+1)+1)^(1/2))-3/4*I
*b^3/c*polylog(4,-(I+(-c*x+1)^(1/2)/(c*x+1)^(1/2))^2/((-c*x+1)/(c*x+1)+1))+
6*I*b^3/c*polylog(4,(I+(-c*x+1)^(1/2)/(c*x+1)^(1/2))/((-c*x+1)/(c*x+1)+1)^(
1/2))+6*I*b^3/c*polylog(4,-(I+(-c*x+1)^(1/2)/(c*x+1)^(1/2))/((-c*x+1)/(c*x+
1)+1)^(1/2))
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{2}a^3\left(\frac{\log(cx+1)}{c} - \frac{\log(cx-1)}{c}\right) + \frac{\frac{15}{2}\left(b^3\log(cx+1) - b^3\log(-cx+1)\right)\arctan\left(\sqrt{cx+1}, \sqrt{-cx+1}\right)^3 - \frac{45}{8}\left(b\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arccot((-c*x+1)^(1/2)/(c*x+1)^(1/2)))^3/(-c^2*x^2+1),x, algo
rithm="maxima")
```

```
[Out] 1/2*a^3*(log(c*x + 1)/c - log(c*x - 1)/c) + 1/64*(4*(b^3*log(c*x + 1) - b^3
*log(-c*x + 1))*arctan2(sqrt(c*x + 1), sqrt(-c*x + 1))^3 - 3*(b^3*log(2)^2*
log(c*x + 1) - b^3*log(2)^2*log(-c*x + 1))*arctan2(sqrt(c*x + 1), sqrt(-c*x
 + 1)) + 64*c*integrate(-1/128*(112*b^3*arctan2(sqrt(c*x + 1), sqrt(-c*x +
1))^3 + 384*a*b^2*arctan2(sqrt(c*x + 1), sqrt(-c*x + 1))^2 + 3*(b^3*log(2)^
2*log(c*x + 1) - b^3*log(2)^2*log(-c*x + 1) - 4*(b^3*log(c*x + 1) - b^3*log
(-c*x + 1))*arctan2(sqrt(c*x + 1), sqrt(-c*x + 1))^2)*sqrt(c*x + 1)*sqrt(-c
*x + 1) + 12*(b^3*log(2)^2 + 32*a^2*b)*arctan2(sqrt(c*x + 1), sqrt(-c*x + 1
)))/(c^2*x^2 - 1), x))/c
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int -\frac{\left(a+b\,\mathrm{acot}\left(\frac{\sqrt{1-c\,x}}{\sqrt{c\,x+1}}\right)\right)^3}{c^2\,x^2-1}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(a + b*acot((1 - c*x)^(1/2)/(c*x + 1)^(1/2)))^3/(c^2*x^2 - 1),x)
[Out] int(-(a + b*acot((1 - c*x)^(1/2)/(c*x + 1)^(1/2)))^3/(c^2*x^2 - 1), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*acot((-c*x+1)**(1/2)/(c*x+1)**(1/2)))**3/(-c**2*x**2+1),x)
[Out] Timed out
```

3.153 $\int \frac{\left(a+b\cot^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)^2}{1-c^2x^2}\,dx$

Optimal. Leaf size=321

$$\frac{ib\text{Li}_2\left(1-\frac{2i}{\frac{\sqrt{1-cx}}{\sqrt{cx+1}}+i}\right)\left(a+b\cot^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{cx+1}}\right)\right)}{c}-\frac{ib\text{Li}_2\left(1-\frac{2\sqrt{1-cx}}{\sqrt{cx+1}\left(\frac{\sqrt{1-cx}}{\sqrt{cx+1}}+i\right)}\right)\left(a+b\cot^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{cx+1}}\right)\right)}{c}-\frac{2\coth^{-1}\left(1-\frac{}{1+}\right.}{}$$

```
[Out] -2*(a+b*arccot((-c*x+1)^(1/2)/(c*x+1)^(1/2)))^2*arccoth(1-2/(1+I*(-c*x+1)^(
1/2)/(c*x+1)^(1/2)))/c+I*b*(a+b*arccot((-c*x+1)^(1/2)/(c*x+1)^(1/2)))*polyl
og(2,1-2*I/(I+(-c*x+1)^(1/2)/(c*x+1)^(1/2)))/c-I*b*(a+b*arccot((-c*x+1)^(1/
2)/(c*x+1)^(1/2)))*polylog(2,1-2*(-c*x+1)^(1/2)/(I+(-c*x+1)^(1/2)/(c*x+1)^(
1/2))/(c*x+1)^(1/2))/c+1/2*b^2*polylog(3,1-2*I/(I+(-c*x+1)^(1/2)/(c*x+1)^(1
/2)))/c-1/2*b^2*polylog(3,1-2*(-c*x+1)^(1/2)/(I+(-c*x+1)^(1/2)/(c*x+1)^(1/2
))/(c*x+1)^(1/2))/c
```

Rubi [A] time = 0.32, antiderivative size = 321, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 40, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.150, Rules used = {6681, 4851, 4989, 4885, 4993, 6610}

$$\frac{ib\text{PolyLog}\left(2,1-\frac{2i}{\frac{\sqrt{1-cx}}{\sqrt{cx+1}}+i}\right)\left(a+b\cot^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{cx+1}}\right)\right)}{c}-\frac{ib\text{PolyLog}\left(2,1-\frac{2\sqrt{1-cx}}{\sqrt{cx+1}\left(\frac{\sqrt{1-cx}}{\sqrt{cx+1}}+i\right)}\right)\left(a+b\cot^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{cx+1}}\right)\right)}{c}+\cdots$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcCot[Sqrt[1 - c*x]/Sqrt[1 + c*x]])^2/(1 - c^2*x^2),x]
```

```
[Out] (-2*(a + b*ArcCot[Sqrt[1 - c*x]/Sqrt[1 + c*x]])^2*ArcCoth[1 - 2/(1 + (I*Sqr
t[1 - c*x])/Sqrt[1 + c*x])])/c + (I*b*(a + b*ArcCot[Sqrt[1 - c*x]/Sqrt[1 +
c*x]])*PolyLog[2, 1 - (2*I)/(I + Sqrt[1 - c*x]/Sqrt[1 + c*x])])/c - (I*b*(a
 + b*ArcCot[Sqrt[1 - c*x]/Sqrt[1 + c*x]])*PolyLog[2, 1 - (2*Sqrt[1 - c*x])/
(Sqrt[1 + c*x]*(I + Sqrt[1 - c*x]/Sqrt[1 + c*x]))])/c + (b^2*PolyLog[3, 1 -
 (2*I)/(I + Sqrt[1 - c*x]/Sqrt[1 + c*x])])/(2*c) - (b^2*PolyLog[3, 1 - (2*S
qrt[1 - c*x])/(Sqrt[1 + c*x]*(I + Sqrt[1 - c*x]/Sqrt[1 + c*x]))])/(2*c)
```

Rule 4851

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_)/(x_), x_Symbol] :> Simp[2*(a +
b*ArcCot[c*x])^p*ArcCoth[1 - 2/(1 + I*c*x)], x] + Dist[2*b*c*p, Int[((a + b
*ArcCot[c*x])^(p - 1)*ArcCoth[1 - 2/(1 + I*c*x)])/(1 + c^2*x^2), x], x] /;
FreeQ[{a, b, c}, x] && IGtQ[p, 1]
```

Rule 4885

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.)/((d_) + (e_.)*(x_)^2), x_Symbo
l] :> -Simp[(a + b*ArcCot[c*x])^(p + 1)/(b*c*d*(p + 1)), x] /; FreeQ[{a, b,
 c, d, e, p}, x] && EqQ[e, c^2*d] && NeQ[p, -1]
```

Rule 4989

```
Int[(ArcCoth[u_]*((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.))/((d_) + (e_.)*(x
_)^2), x_Symbol] :> Dist[1/2, Int[(Log[SimplifyIntegrand[1 + 1/u, x]]*(a +
b*ArcCot[c*x])^p)/(d + e*x^2), x], x] - Dist[1/2, Int[(Log[SimplifyIntegran
d[1 - 1/u, x]]*(a + b*ArcCot[c*x])^p)/(d + e*x^2), x], x] /; FreeQ[{a, b, c
, d, e}, x] && IGtQ[p, 0] && EqQ[e, c^2*d] && EqQ[u^2 - (1 - (2*I)/(I - c*x
```

```
))^2, 0]
```

Rule 4993

```
Int[(Log[u_]*((a_.) + ArcCot[(c_.)*(x_)]*(b_.))^(p_.))/((d_) + (e_.)*(x_)^2
), x_Symbol] :> Simp[(I*(a + b*ArcCot[c*x])^p*PolyLog[2, 1 - u])/(2*c*d), x
] + Dist[(b*p*I)/2, Int[((a + b*ArcCot[c*x])^(p - 1)*PolyLog[2, 1 - u])/(d
+ e*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && IGtQ[p, 0] && EqQ[e, c^2*d
] && EqQ[(1 - u)^2 - (1 - (2*I)/(I + c*x))^2, 0]
```

Rule 6610

```
Int[(u_)*PolyLog[n_, v_], x_Symbol] :> With[{w = DerivativeDivides[v, u*v,
x]}, Simp[w*PolyLog[n + 1, v], x] /;  !FalseQ[w]] /; FreeQ[n, x]
```

Rule 6681

```
Int[((a_.) + (b_.)*(F_)[((c_.)*Sqrt[(d_.) + (e_.)*(x_)])/Sqrt[(f_.) + (g_.)
*(x_)]])^(n_.)/((A_.) + (C_.)*(x_)^2), x_Symbol] :> Dist[(2*e*g)/(C*(e*f -
d*g)), Subst[Int[(a + b*F[c*x])^n/x, x], x, Sqrt[d + e*x]/Sqrt[f + g*x]], x
] /; FreeQ[{a, b, c, d, e, f, g, A, C, F}, x] && EqQ[C*d*f - A*e*g, 0] && E
qQ[e*f + d*g, 0] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{\left(a+b\cot^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)^2}{1-c^2x^2}\,dx = -\frac{\text{Subst}\left(\int \frac{\left(a+b\cot^{-1}(x)\right)^2}{x}\,dx, x, \frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)}{c}$$

$$= -\frac{2\left(a+b\cot^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)^2 \coth^{-1}\left(1-\frac{2}{1+\frac{i\sqrt{1-cx}}{\sqrt{1+cx}}}\right)}{c} - \frac{(4b)\,\text{Subst}\left(\int \frac{\left(a+b\cot^{-1}(x)\right)\coth^{-}}{1+x^2}\right.}{c}$$

$$= -\frac{2\left(a+b\cot^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)^2 \coth^{-1}\left(1-\frac{2}{1+\frac{i\sqrt{1-cx}}{\sqrt{1+cx}}}\right)}{c} + \frac{(2b)\,\text{Subst}\left(\int \frac{\left(a+b\cot^{-1}(x)\right)\log\left(\frac{}{i}\right.}{1+x^2}\right.}{c}$$

$$= -\frac{2\left(a+b\cot^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)^2 \coth^{-1}\left(1-\frac{2}{1+\frac{i\sqrt{1-cx}}{\sqrt{1+cx}}}\right)}{c} + \frac{ib\left(a+b\cot^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)\text{Li}_2\left(1\right.}{c}$$

$$= -\frac{2\left(a+b\cot^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)^2 \coth^{-1}\left(1-\frac{2}{1+\frac{i\sqrt{1-cx}}{\sqrt{1+cx}}}\right)}{c} + \frac{ib\left(a+b\cot^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)\text{Li}_2\left(1\right.}{c}$$

Mathematica [F] time = 0.52, size = 0, normalized size = 0.00

$$\int \frac{\left(a+b\cot^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)^2}{1-c^2x^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[(a + b*ArcCot[Sqrt[1 - c*x]/Sqrt[1 + c*x]])^2/(1 - c^2*x^2),x]
[Out] Integrate[(a + b*ArcCot[Sqrt[1 - c*x]/Sqrt[1 + c*x]])^2/(1 - c^2*x^2), x]
```

fricas [F] time = 0.61, size = 0, normalized size = 0.00

$$\operatorname{integral}\left(-\frac{b^2 \operatorname{arccot}\left(\frac{\sqrt{-cx+1}}{\sqrt{cx+1}}\right)^2 + 2\,ab \operatorname{arccot}\left(\frac{\sqrt{-cx+1}}{\sqrt{cx+1}}\right) + a^2}{c^2x^2 - 1}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arccot((-c*x+1)^(1/2)/(c*x+1)^(1/2)))^2/(-c^2*x^2+1),x, algo
rithm="fricas")
```

```
[Out] integral(-(b^2*arccot(sqrt(-c*x + 1)/sqrt(c*x + 1))^2 + 2*a*b*arccot(sqrt(-
c*x + 1)/sqrt(c*x + 1)) + a^2)/(c^2*x^2 - 1), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int -\frac{\left(b \operatorname{arccot}\left(\frac{\sqrt{-cx+1}}{\sqrt{cx+1}}\right) + a\right)^2}{c^2x^2 - 1}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arccot((-c*x+1)^(1/2)/(c*x+1)^(1/2)))^2/(-c^2*x^2+1),x, algo
rithm="giac")
```

```
[Out] integrate(-(b*arccot(sqrt(-c*x + 1)/sqrt(c*x + 1)) + a)^2/(c^2*x^2 - 1), x)
```

maple [B] time = 1.65, size = 823, normalized size = 2.56

$$-\frac{a^2 \ln(cx-1)}{2c} + \frac{a^2 \ln(cx+1)}{2c} - \frac{b^2 \operatorname{arccot}\left(\frac{\sqrt{-cx+1}}{\sqrt{cx+1}}\right)^2 \ln\left(\frac{\left(i+\frac{\sqrt{-cx+1}}{\sqrt{cx+1}}\right)^2}{\frac{-cx+1}{cx+1}+1} + 1\right)}{c} + \frac{i b^2 \operatorname{arccot}\left(\frac{\sqrt{-cx+1}}{\sqrt{cx+1}}\right) \operatorname{polylog}\left(2, -\frac{\left(i+\cdots\right.}{\cdots}\right.}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arccot((-c*x+1)^(1/2)/(c*x+1)^(1/2)))^2/(-c^2*x^2+1),x)
```

```
[Out] -1/2*a^2/c*ln(c*x-1)+1/2*a^2/c*ln(c*x+1)-b^2/c*arccot((-c*x+1)^(1/2)/(c*x+1
)^(1/2))^2*ln((I+(-c*x+1)^(1/2)/(c*x+1)^(1/2))^2/((-c*x+1)/(c*x+1)+1)+1)+I*
b^2/c*arccot((-c*x+1)^(1/2)/(c*x+1)^(1/2))*polylog(2,-(I+(-c*x+1)^(1/2)/(c*
x+1)^(1/2))^2/((-c*x+1)/(c*x+1)+1))-1/2*b^2/c*polylog(3,-(I+(-c*x+1)^(1/2)/
(c*x+1)^(1/2))^2/((-c*x+1)/(c*x+1)+1))+b^2/c*arccot((-c*x+1)^(1/2)/(c*x+1)^
(1/2))^2*ln(1-(I+(-c*x+1)^(1/2)/(c*x+1)^(1/2))/((-c*x+1)/(c*x+1)+1)^(1/2))-
2*I*b^2/c*arccot((-c*x+1)^(1/2)/(c*x+1)^(1/2))*polylog(2,(I+(-c*x+1)^(1/2)/
(c*x+1)^(1/2))/((-c*x+1)/(c*x+1)+1)^(1/2))+2*b^2/c*polylog(3,(I+(-c*x+1)^(1
/2)/(c*x+1)^(1/2))/((-c*x+1)/(c*x+1)+1)^(1/2))+b^2/c*arccot((-c*x+1)^(1/2)/
(c*x+1)^(1/2))^2*ln(1+(I+(-c*x+1)^(1/2)/(c*x+1)^(1/2))/((-c*x+1)/(c*x+1)+1)
^(1/2))-2*I*b^2/c*arccot((-c*x+1)^(1/2)/(c*x+1)^(1/2))*polylog(2,-(I+(-c*x+
1)^(1/2)/(c*x+1)^(1/2))/((-c*x+1)/(c*x+1)+1)^(1/2))+2*b^2/c*polylog(3,-(I+(
-c*x+1)^(1/2)/(c*x+1)^(1/2))/((-c*x+1)/(c*x+1)+1)^(1/2))+2*a*b/c*arccot((-c
*x+1)^(1/2)/(c*x+1)^(1/2))*ln(1-(I+(-c*x+1)^(1/2)/(c*x+1)^(1/2))^2/((-c*x+1
)/(c*x+1)+1))-2*a*b/c*arccot((-c*x+1)^(1/2)/(c*x+1)^(1/2))*ln((I+(-c*x+1)^(
1/2)/(c*x+1)^(1/2))^2/((-c*x+1)/(c*x+1)+1)+1)+I*a*b/c*dilog((I+(-c*x+1)^(1/
2)/(c*x+1)^(1/2))^2/((-c*x+1)/(c*x+1)+1)+1)-I*a*b/c*dilog(1-(I+(-c*x+1)^(1/
2)/(c*x+1)^(1/2))^2/((-c*x+1)/(c*x+1)+1))
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{2}a^2\left(\frac{\log(cx+1)}{c}-\frac{\log(cx-1)}{c}\right)-\frac{b^2\log(2)^2\log(cx+1)-b^2\log(2)^2\log(-cx+1)-4\left(b^2\log(cx+1)-b^2\log(\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arccot((-c*x+1)^(1/2)/(c*x+1)^(1/2)))^2/(-c^2*x^2+1),x, algo
rithm="maxima")
```

```
[Out] 1/2*a^2*(log(c*x + 1)/c - log(c*x - 1)/c) - 1/32*(b^2*log(2)^2*log(c*x + 1)
 - b^2*log(2)^2*log(-c*x + 1) - 4*(b^2*log(c*x + 1) - b^2*log(-c*x + 1))*ar
ctan2(sqrt(c*x + 1), sqrt(-c*x + 1))^2 - (b^2*(log(c*x + 1)/c - log(c*x - 1
)/c)*log(2)^2 + 64*b^2*integrate(1/16*sqrt(c*x + 1)*sqrt(-c*x + 1)*arctan(s
qrt(c*x + 1)/sqrt(-c*x + 1))*log(c*x + 1)/(c^2*x^2 - 1), x) - 64*b^2*integr
ate(1/16*sqrt(c*x + 1)*sqrt(-c*x + 1)*arctan(sqrt(c*x + 1)/sqrt(-c*x + 1))*
log(-c*x + 1)/(c^2*x^2 - 1), x) - 384*b^2*integrate(1/16*arctan(sqrt(c*x +
1)/sqrt(-c*x + 1))^2/(c^2*x^2 - 1), x) - 1024*a*b*integrate(1/16*arctan(sqr
t(c*x + 1)/sqrt(-c*x + 1))/(c^2*x^2 - 1), x))*c)/c
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int -\frac{\left(a+b\,\mathrm{acot}\left(\frac{\sqrt{1-c\,x}}{\sqrt{c\,x+1}}\right)\right)^2}{c^2\,x^2-1}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(a + b*acot((1 - c*x)^(1/2)/(c*x + 1)^(1/2)))^2/(c^2*x^2 - 1),x)
```

```
[Out] int(-(a + b*acot((1 - c*x)^(1/2)/(c*x + 1)^(1/2)))^2/(c^2*x^2 - 1), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*acot((-c*x+1)**(1/2)/(c*x+1)**(1/2)))**2/(-c**2*x**2+1),x)
```

```
[Out] Timed out
```

3.154 $\int \frac{a+b\cot^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)}{1-c^2x^2}\,dx$

Optimal. Leaf size=98

$$-\frac{a\log\left(\frac{\sqrt{1-cx}}{\sqrt{cx+1}}\right)}{c}+\frac{ib\text{Li}_2\left(-\frac{i\sqrt{cx+1}}{\sqrt{1-cx}}\right)}{2c}-\frac{ib\text{Li}_2\left(\frac{i\sqrt{cx+1}}{\sqrt{1-cx}}\right)}{2c}$$

```
[Out] -a*ln((-c*x+1)^(1/2)/(c*x+1)^(1/2))/c+1/2*I*b*polylog(2,-I*(c*x+1)^(1/2)/(-
c*x+1)^(1/2))/c-1/2*I*b*polylog(2,I*(c*x+1)^(1/2)/(-c*x+1)^(1/2))/c
```

Rubi [A] time = 0.07, antiderivative size = 98, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105, Rules used = {206, 6681, 4849, 2391}

$$\frac{ib\text{PolyLog}\left(2,-\frac{i\sqrt{cx+1}}{\sqrt{1-cx}}\right)}{2c}-\frac{ib\text{PolyLog}\left(2,\frac{i\sqrt{cx+1}}{\sqrt{1-cx}}\right)}{2c}-\frac{a\log\left(\frac{\sqrt{1-cx}}{\sqrt{cx+1}}\right)}{c}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*ArcCot[Sqrt[1 - c*x]/Sqrt[1 + c*x]])/(1 - c^2*x^2),x]
```

```
[Out] -((a*Log[Sqrt[1 - c*x]/Sqrt[1 + c*x]])/c) + ((I/2)*b*PolyLog[2, ((-I)*Sqrt[
1 + c*x])/Sqrt[1 - c*x]])/c - ((I/2)*b*PolyLog[2, (I*Sqrt[1 + c*x])/Sqrt[1
- c*x]])/c
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 4849

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))/(x_), x_Symbol] :> Simp[a*Log[x], x]
 + (Dist[(I*b)/2, Int[Log[1 - I/(c*x)]/x, x], x] - Dist[(I*b)/2, Int[Log[1
+ I/(c*x)]/x, x], x]) /; FreeQ[{a, b, c}, x]
```

Rule 6681

```
Int[((a_.) + (b_.)*(F_)[((c_.)*Sqrt[(d_.) + (e_.)*(x_)])/Sqrt[(f_.) + (g_.)
*(x_)]])^(n_.)/((A_.) + (C_.)*(x_)^2), x_Symbol] :> Dist[(2*e*g)/(C*(e*f -
d*g)), Subst[Int[(a + b*F[c*x])^n/x, x], x, Sqrt[d + e*x]/Sqrt[f + g*x]], x
] /; FreeQ[{a, b, c, d, e, f, g, A, C, F}, x] && EqQ[C*d*f - A*e*g, 0] && E
qQ[e*f + d*g, 0] && IGtQ[n, 0]
```

Rubi steps

$$\int \frac{a+b\cot^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)}{1-c^2x^2}\,dx = -\frac{\text{Subst}\left(\int \frac{a+b\cot^{-1}(x)}{x}\,dx, x, \frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)}{c}$$
$$= -\frac{a\log\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)}{c} - \frac{(ib)\,\text{Subst}\left(\int \frac{\log\left(1-\frac{i}{x}\right)}{x}\,dx, x, \frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)}{2c} + \frac{(ib)\,\text{Subst}\left(\int \frac{\log\left(1+\frac{i}{x}\right)}{x}\,dx, x,\right.}{2c}$$
$$= -\frac{a\log\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)}{c} + \frac{ib\text{Li}_2\left(-\frac{i\sqrt{1+cx}}{\sqrt{1-cx}}\right)}{2c} - \frac{ib\text{Li}_2\left(\frac{i\sqrt{1+cx}}{\sqrt{1-cx}}\right)}{2c}$$

Mathematica [A] time = 0.04, size = 93, normalized size = 0.95

$$-\frac{a\log\left(\frac{\sqrt{1-cx}}{\sqrt{cx+1}}\right) - \frac{1}{2}ib\text{Li}_2\left(-\frac{i\sqrt{cx+1}}{\sqrt{1-cx}}\right) + \frac{1}{2}ib\text{Li}_2\left(\frac{i\sqrt{cx+1}}{\sqrt{1-cx}}\right)}{c}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*ArcCot[Sqrt[1 - c*x]/Sqrt[1 + c*x]])/(1 - c^2*x^2),x]
```

```
[Out] -((a*Log[Sqrt[1 - c*x]/Sqrt[1 + c*x]] - (I/2)*b*PolyLog[2, ((-I)*Sqrt[1 + c
*x])/Sqrt[1 - c*x]] + (I/2)*b*PolyLog[2, (I*Sqrt[1 + c*x])/Sqrt[1 - c*x]])/
c)
```

fricas [F] time = 0.60, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{b\,\text{arccot}\left(\frac{\sqrt{-cx+1}}{\sqrt{cx+1}}\right)+a}{c^2x^2-1}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arccot((-c*x+1)^(1/2)/(c*x+1)^(1/2)))/(-c^2*x^2+1),x, algori
thm="fricas")
```

```
[Out] integral(-(b*arccot(sqrt(-c*x + 1)/sqrt(c*x + 1)) + a)/(c^2*x^2 - 1), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int -\frac{b\,\text{arccot}\left(\frac{\sqrt{-cx+1}}{\sqrt{cx+1}}\right)+a}{c^2x^2-1}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arccot((-c*x+1)^(1/2)/(c*x+1)^(1/2)))/(-c^2*x^2+1),x, algori
thm="giac")
```

```
[Out] integrate(-(b*arccot(sqrt(-c*x + 1)/sqrt(c*x + 1)) + a)/(c^2*x^2 - 1), x)
```

maple [B] time = 0.97, size = 259, normalized size = 2.64

$$-\frac{a\ln(cx-1)}{2c}+\frac{a\ln(cx+1)}{2c}+\frac{b\,\text{arccot}\left(\frac{\sqrt{-cx+1}}{\sqrt{cx+1}}\right)\ln\left(1-\frac{\left(i+\frac{\sqrt{-cx+1}}{\sqrt{cx+1}}\right)^2}{\frac{-cx+1}{cx+1}+1}\right)}{c}-\frac{b\,\text{arccot}\left(\frac{\sqrt{-cx+1}}{\sqrt{cx+1}}\right)\ln\left(\frac{\left(i+\frac{\sqrt{-cx+1}}{\sqrt{cx+1}}\right)^2}{\frac{-cx+1}{cx+1}}+1\right)}{c}+\frac{ib\,\text{d}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arccot((-c*x+1)^(1/2)/(c*x+1)^(1/2)))/(-c^2*x^2+1),x)
```

```
[Out] -1/2*a/c*ln(c*x-1)+1/2*a/c*ln(c*x+1)+b/c*arccot((-c*x+1)^(1/2)/(c*x+1)^(1/2
))*ln(1-(I+(-c*x+1)^(1/2)/(c*x+1)^(1/2))^2/((-c*x+1)/(c*x+1)+1))-b/c*arccot
((-c*x+1)^(1/2)/(c*x+1)^(1/2))*ln((I+(-c*x+1)^(1/2)/(c*x+1)^(1/2))^2/((-c*x
+1)/(c*x+1)+1)+1)+1/2*I*b/c*dilog((I+(-c*x+1)^(1/2)/(c*x+1)^(1/2))^2/((-c*x
+1)/(c*x+1)+1)+1)-1/2*I*b/c*dilog(1-(I+(-c*x+1)^(1/2)/(c*x+1)^(1/2))^2/((-c
*x+1)/(c*x+1)+1))
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{2}\,a\left(\frac{\log\left(cx+1\right)}{c}-\frac{\log\left(cx-1\right)}{c}\right)+\frac{\left(\left(\log\left(cx+1\right)-\log\left(-cx+1\right)\right)\arctan\left(\sqrt{cx+1},\sqrt{-cx+1}\right)+c\int\frac{e^{\left(\frac{1}{2}\log(cx+1)\right.}}{}\right.}{2\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arccot((-c*x+1)^(1/2)/(c*x+1)^(1/2)))/(-c^2*x^2+1),x, algori
thm="maxima")
```

```
[Out] 1/2*a*(log(c*x + 1)/c - log(c*x - 1)/c) + 1/2*((log(c*x + 1) - log(-c*x + 1
))*arctan2(sqrt(c*x + 1), sqrt(-c*x + 1)) + 2*c*integrate(1/2*(e^(1/2*log(c
*x + 1) + 1/2*log(-c*x + 1))*log(c*x + 1) - e^(1/2*log(c*x + 1) + 1/2*log(-
c*x + 1))*log(-c*x + 1))/((c^2*x^2 - 1)*(c*x + 1) - (c^2*x^2 - 1)*(c*x - 1)
), x))*b/c
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int -\frac{a+b\,\mathrm{acot}\left(\frac{\sqrt{1-c\,x}}{\sqrt{c\,x+1}}\right)}{c^2\,x^2-1}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(a + b*acot((1 - c*x)^(1/2)/(c*x + 1)^(1/2)))/(c^2*x^2 - 1),x)
```

```
[Out] int(-(a + b*acot((1 - c*x)^(1/2)/(c*x + 1)^(1/2)))/(c^2*x^2 - 1), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*acot((-c*x+1)**(1/2)/(c*x+1)**(1/2)))/(-c**2*x**2+1),x)
```

```
[Out] Timed out
```

3.155 $\int \frac{1}{(1-c^2x^2)\left(a+b\cot^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)}\,dx$

Optimal. Leaf size=43

$$\text{Int}\left(\frac{1}{(1-c^2x^2)\left(a+b\cot^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{cx+1}}\right)\right)},x\right)$$

```
[Out] Unintegrable(1/(-c^2*x^2+1)/(a+b*arccot((-c*x+1)^(1/2)/(c*x+1)^(1/2))),x)
```

Rubi [A] time = 0.05, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{(1-c^2x^2)\left(a+b\cot^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((1 - c^2*x^2)*(a + b*ArcCot[Sqrt[1 - c*x]/Sqrt[1 + c*x]])),x]
```

```
[Out] Defer[Int][1/((1 - c^2*x^2)*(a + b*ArcCot[Sqrt[1 - c*x]/Sqrt[1 + c*x]])), x
]
```

Rubi steps

$$\int \frac{1}{(1-c^2x^2)\left(a+b\cot^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)}\,dx=\int \frac{1}{(1-c^2x^2)\left(a+b\cot^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)}\,dx$$

Mathematica [A] time = 0.09, size = 0, normalized size = 0.00

$$\int \frac{1}{(1-c^2x^2)\left(a+b\cot^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((1 - c^2*x^2)*(a + b*ArcCot[Sqrt[1 - c*x]/Sqrt[1 + c*x]])),x]
```

```
[Out] Integrate[1/((1 - c^2*x^2)*(a + b*ArcCot[Sqrt[1 - c*x]/Sqrt[1 + c*x]])), x]
```

fricas [A] time = 0.73, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{1}{ac^2x^2+(bc^2x^2-b)\,\text{arccot}\left(\frac{\sqrt{-cx+1}}{\sqrt{cx+1}}\right)-a},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(-c^2*x^2+1)/(a+b*arccot((-c*x+1)^(1/2)/(c*x+1)^(1/2))),x, algo
rithm="fricas")
```

```
[Out] integral(-1/(a*c^2*x^2 + (b*c^2*x^2 - b)*arccot(sqrt(-c*x + 1)/sqrt(c*x + 1
)) - a), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int -\frac{1}{\left(c^2x^2-1\right)\left(b\operatorname{arccot}\left(\frac{\sqrt{-cx+1}}{\sqrt{cx+1}}\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(-c^2*x^2+1)/(a+b*arccot((-c*x+1)^(1/2)/(c*x+1)^(1/2))),x, algo
rithm="giac")
```

```
[Out] integrate(-1/((c^2*x^2 - 1)*(b*arccot(sqrt(-c*x + 1)/sqrt(c*x + 1)) + a)),
x)
```

maple [A] time = 1.38, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(-c^2x^2+1\right)\left(a+b\operatorname{arccot}\left(\frac{\sqrt{-cx+1}}{\sqrt{cx+1}}\right)\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(-c^2*x^2+1)/(a+b*arccot((-c*x+1)^(1/2)/(c*x+1)^(1/2))),x)
```

```
[Out] int(1/(-c^2*x^2+1)/(a+b*arccot((-c*x+1)^(1/2)/(c*x+1)^(1/2))),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{1}{\left(c^2x^2-1\right)\left(b\operatorname{arccot}\left(\frac{\sqrt{-cx+1}}{\sqrt{cx+1}}\right)+a\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(-c^2*x^2+1)/(a+b*arccot((-c*x+1)^(1/2)/(c*x+1)^(1/2))),x, algo
rithm="maxima")
```

```
[Out] -integrate(1/((c^2*x^2 - 1)*(b*arccot(sqrt(-c*x + 1)/sqrt(c*x + 1)) + a)),
x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.02

$$-\int \frac{1}{\left(a+b\operatorname{acot}\left(\frac{\sqrt{1-c\,x}}{\sqrt{c\,x+1}}\right)\right)\,\left(c^2\,x^2-1\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-1/((a + b*acot((1 - c*x)^(1/2)/(c*x + 1)^(1/2)))*(c^2*x^2 - 1)),x)
```

```
[Out] -int(1/((a + b*acot((1 - c*x)^(1/2)/(c*x + 1)^(1/2)))*(c^2*x^2 - 1)), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{1}{ac^2x^2-a+bc^2x^2\operatorname{acot}\left(\frac{\sqrt{-cx+1}}{\sqrt{cx+1}}\right)-b\operatorname{acot}\left(\frac{\sqrt{-cx+1}}{\sqrt{cx+1}}\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(-c**2*x**2+1)/(a+b*acot((-c*x+1)**(1/2)/(c*x+1)**(1/2))),x)
```

```
[Out] -Integral(1/(a*c**2*x**2 - a + b*c**2*x**2*acot(sqrt(-c*x + 1)/sqrt(c*x + 1
)) - b*acot(sqrt(-c*x + 1)/sqrt(c*x + 1))), x)
```

3.156 $\int \frac{1}{(1-c^2x^2)\left(a+b\cot^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)^2}\,dx$

Optimal. Leaf size=43

$$\text{Int}\left(\frac{1}{(1-c^2x^2)\left(a+b\cot^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{cx+1}}\right)\right)^2},x\right)$$

```
[Out] Unintegrable(1/(-c^2*x^2+1)/(a+b*arccot((-c*x+1)^(1/2)/(c*x+1)^(1/2)))^2,x)
```

Rubi [A] time = 0.04, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{1}{(1-c^2x^2)\left(a+b\cot^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[1/((1 - c^2*x^2)*(a + b*ArcCot[Sqrt[1 - c*x]/Sqrt[1 + c*x]])^2),x]
```

```
[Out] Defer[Int][1/((1 - c^2*x^2)*(a + b*ArcCot[Sqrt[1 - c*x]/Sqrt[1 + c*x]])^2),
 x]
```

Rubi steps

$$\int \frac{1}{(1-c^2x^2)\left(a+b\cot^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)^2}\,dx=\int \frac{1}{(1-c^2x^2)\left(a+b\cot^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)^2}\,dx$$

Mathematica [A] time = 0.82, size = 0, normalized size = 0.00

$$\int \frac{1}{(1-c^2x^2)\left(a+b\cot^{-1}\left(\frac{\sqrt{1-cx}}{\sqrt{1+cx}}\right)\right)^2}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[1/((1 - c^2*x^2)*(a + b*ArcCot[Sqrt[1 - c*x]/Sqrt[1 + c*x]])^2),x
]
```

```
[Out] Integrate[1/((1 - c^2*x^2)*(a + b*ArcCot[Sqrt[1 - c*x]/Sqrt[1 + c*x]])^2),
x]
```

fricas [A] time = 0.74, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{1}{a^2c^2x^2+(b^2c^2x^2-b^2)\,\text{arccot}\left(\frac{\sqrt{-cx+1}}{\sqrt{cx+1}}\right)^2-a^2+2\,(abc^2x^2-ab)\,\text{arccot}\left(\frac{\sqrt{-cx+1}}{\sqrt{cx+1}}\right)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(-c^2*x^2+1)/(a+b*arccot((-c*x+1)^(1/2)/(c*x+1)^(1/2)))^2,x, al
gorithm="fricas")
```

```
[Out] integral(-1/(a^2*c^2*x^2 + (b^2*c^2*x^2 - b^2)*arccot(sqrt(-c*x + 1)/sqrt(c
*x + 1))^2 - a^2 + 2*(a*b*c^2*x^2 - a*b)*arccot(sqrt(-c*x + 1)/sqrt(c*x + 1
))), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int -\frac{1}{\left(c^2x^2-1\right)\left(b\,\mathrm{arccot}\left(\frac{\sqrt{-cx+1}}{\sqrt{cx+1}}\right)+a\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(-c^2*x^2+1)/(a+b*arccot((-c*x+1)^(1/2)/(c*x+1)^(1/2)))^2,x, al
gorithm="giac")
```

```
[Out] integrate(-1/((c^2*x^2 - 1)*(b*arccot(sqrt(-c*x + 1)/sqrt(c*x + 1)) + a)^2)
, x)
```

maple [A] time = 1.35, size = 0, normalized size = 0.00

$$\int \frac{1}{\left(-c^2x^2+1\right)\left(a+b\,\mathrm{arccot}\left(\frac{\sqrt{-cx+1}}{\sqrt{cx+1}}\right)\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(-c^2*x^2+1)/(a+b*arccot((-c*x+1)^(1/2)/(c*x+1)^(1/2)))^2,x)
```

```
[Out] int(1/(-c^2*x^2+1)/(a+b*arccot((-c*x+1)^(1/2)/(c*x+1)^(1/2)))^2,x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{2\left(\left(b^2c^2\arctan\left(\sqrt{cx+1},\sqrt{-cx+1}\right)+abc^2\right)\sqrt{cx+1}\,\sqrt{-cx+1}\,\int \frac{x}{\left(abc^2x^2-ab+\left(b^2c^2x^2-b^2\right)\arctan\left(\sqrt{cx+1},\sqrt{-cx+1}\right)\right)\sqrt{c}}\right.}{\left(b^2c\arctan\left(\sqrt{cx+1},\sqrt{-cx+1}\right)+abc\right)\sqrt{cx+1}\,\sqrt{-cx+1}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(-c^2*x^2+1)/(a+b*arccot((-c*x+1)^(1/2)/(c*x+1)^(1/2)))^2,x, al
gorithm="maxima")
```

```
[Out] -2*(2*(b^2*c^2*arctan2(sqrt(c*x + 1), sqrt(-c*x + 1)) + a*b*c^2)*sqrt(c*x +
 1)*sqrt(-c*x + 1)*integrate(1/2*x/((a*b*c^2*x^2 - a*b + (b^2*c^2*x^2 - b^2
)*arctan2(sqrt(c*x + 1), sqrt(-c*x + 1)))*sqrt(c*x + 1)*sqrt(-c*x + 1)), x)
 + 1)/((b^2*c*arctan2(sqrt(c*x + 1), sqrt(-c*x + 1)) + a*b*c)*sqrt(c*x + 1)
*sqrt(-c*x + 1))
```

mupad [A] time = 0.00, size = -1, normalized size = -0.02

$$-\int \frac{1}{{\left(a+b\,\mathrm{acot}\left(\frac{\sqrt{1-c\,x}}{\sqrt{c\,x+1}}\right)\right)}^2\,\left(c^2\,x^2-1\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-1/((a + b*acot((1 - c*x)^(1/2)/(c*x + 1)^(1/2)))^2*(c^2*x^2 - 1)),x)
```

```
[Out] -int(1/((a + b*acot((1 - c*x)^(1/2)/(c*x + 1)^(1/2)))^2*(c^2*x^2 - 1)), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{1}{a^2c^2x^2-a^2+2abc^2x^2\,\mathrm{acot}\left(\frac{\sqrt{-cx+1}}{\sqrt{cx+1}}\right)-2ab\,\mathrm{acot}\left(\frac{\sqrt{-cx+1}}{\sqrt{cx+1}}\right)+b^2c^2x^2\,\mathrm{acot}^2\left(\frac{\sqrt{-cx+1}}{\sqrt{cx+1}}\right)-b^2\,\mathrm{acot}^2\left(\frac{\sqrt{-cx+1}}{\sqrt{cx+1}}\right)}\,d$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(-c**2*x**2+1)/(a+b*acot((-c*x+1)**(1/2)/(c*x+1)**(1/2)))**2,x)
```

```
[Out] -Integral(1/(a**2*c**2*x**2 - a**2 + 2*a*b*c**2*x**2*acot(sqrt(-c*x + 1)/sq
rt(c*x + 1)) - 2*a*b*acot(sqrt(-c*x + 1)/sqrt(c*x + 1)) + b**2*c**2*x**2*ac
ot(sqrt(-c*x + 1)/sqrt(c*x + 1))**2 - b**2*acot(sqrt(-c*x + 1)/sqrt(c*x + 1
))**2), x)
```

3.157 $\int \cot^{-1}(\tan(a+bx))\,dx$

Optimal. Leaf size=16

$$-\frac{\cot^{-1}(\tan(a+bx))^2}{2b}$$

```
[Out] -1/2*(1/2*Pi-arctan(tan(b*x+a)))^2/b
```

Rubi [A] time = 0.01, antiderivative size = 16, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 7, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.286, Rules used = {2157, 30}

$$-\frac{\cot^{-1}(\tan(a+bx))^2}{2b}$$

Antiderivative was successfully verified.

```
[In] Int[ArcCot[Tan[a + b*x]],x]
[Out] -ArcCot[Tan[a + b*x]]^2/(2*b)
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 2157

```
Int[(u_)^(m_.), x_Symbol] :> With[{c = Simplify[D[u, x]]}, Dist[1/c, Subst[
Int[x^m, x], x, u], x]] /; FreeQ[m, x] && PiecewiseLinearQ[u, x]
```

Rubi steps

$$\begin{aligned}\int \cot^{-1}(\tan(a+bx))\,dx &= -\frac{\text{Subst}\left(\int x\,dx, x, \cot^{-1}(\tan(a+bx))\right)}{b}\\ &= -\frac{\cot^{-1}(\tan(a+bx))^2}{2b}\end{aligned}$$

Mathematica [A] time = 0.01, size = 18, normalized size = 1.12

$$x\cot^{-1}(\tan(a+bx))+\frac{bx^2}{2}$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcCot[Tan[a + b*x]],x]
[Out] (b*x^2)/2 + x*ArcCot[Tan[a + b*x]]
```

fricas [A] time = 0.68, size = 15, normalized size = 0.94

$$-\frac{1}{2}bx^2+\frac{1}{2}(\pi-2a)x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/2*pi-arctan(tan(b*x+a)),x, algorithm="fricas")
[Out] -1/2*b*x^2 + 1/2*(pi - 2*a)*x
```

giac [A] time = 0.21, size = 30, normalized size = 1.88

$$-\frac{1}{2}bx^2 + \pi x\left\lfloor\frac{bx+a}{\pi} + \frac{1}{2}\right\rfloor + \frac{1}{2}\pi x - ax$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/2*pi-arctan(tan(b*x+a)),x, algorithm="giac")
[Out] -1/2*b*x^2 + pi*x*floor((b*x + a)/pi + 1/2) + 1/2*pi*x - a*x
```

maple [A] time = 0.04, size = 20, normalized size = 1.25

$$\frac{\pi x}{2} - \frac{\arctan(\tan(bx+a))^2}{2b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/2*Pi-arctan(tan(b*x+a)),x)
[Out] 1/2*Pi*x-1/2*arctan(tan(b*x+a))^2/b
```

maxima [A] time = 0.31, size = 17, normalized size = 1.06

$$\frac{1}{2}\pi x - \frac{(bx+a)^2}{2b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/2*pi-arctan(tan(b*x+a)),x, algorithm="maxima")
[Out] 1/2*pi*x - 1/2*(b*x + a)^2/b
```

mupad [B] time = 0.08, size = 21, normalized size = 1.31

$$\frac{\Pi x}{2} + \frac{bx^2}{2} - x\,\mathrm{atan}(\tan(a+bx))$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(Pi/2 - atan(tan(a + b*x)),x)
[Out] (Pi*x)/2 + (b*x^2)/2 - x*atan(tan(a + b*x))
```

sympy [B] time = 0.14, size = 48, normalized size = 3.00

$$\frac{\pi x}{2} - \begin{cases} \frac{\left(\mathrm{atan}(\tan(a+bx))+\pi\left\lfloor\frac{a+bx-\frac{\pi}{2}}{\pi}\right\rfloor\right)^2}{2b} & \text{for } b \neq 0 \\ x\left(\mathrm{atan}(\tan(a)) + \pi\left\lfloor\frac{a-\frac{\pi}{2}}{\pi}\right\rfloor\right) & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/2*pi-atan(tan(b*x+a)),x)
[Out] pi*x/2 - Piecewise(((atan(tan(a + b*x)) + pi*floor((a + b*x - pi/2)/pi))**2
/(2*b), Ne(b, 0)), (x*(atan(tan(a)) + pi*floor((a - pi/2)/pi)), True))
```

3.158 $\int x^2 \cot^{-1}(c + d\tan(a + bx))\,dx$

Optimal. Leaf size=403

$$\frac{\text{Li}_4\left(-\frac{(ic+d+1)e^{2ia+2ibx}}{ic-d+1}\right)}{8b^3}-\frac{\text{Li}_4\left(-\frac{(c+i(1-d))e^{2ia+2ibx}}{c+i(d+1)}\right)}{8b^3}-\frac{ix\text{Li}_3\left(-\frac{(ic+d+1)e^{2ia+2ibx}}{ic-d+1}\right)}{4b^2}+\frac{ix\text{Li}_3\left(-\frac{(c+i(1-d))e^{2ia+2ibx}}{c+i(d+1)}\right)}{4b^2}-\frac{x^2\text{Li}_2\left(-\frac{(ic+\cdots}{\cdots}\right)}{4b\cdots}$$

```
[Out] 1/3*x^3*arccot(c+d*tan(b*x+a))-1/6*I*x^3*ln(1+(1+I*c+d)*exp(2*I*a+2*I*b*x)/
(1+I*c-d))+1/6*I*x^3*ln(1+(c+I*(1-d))*exp(2*I*a+2*I*b*x)/(c+I*(1+d)))-1/4*x
^2*polylog(2,-(1+I*c+d)*exp(2*I*a+2*I*b*x)/(1+I*c-d))/b+1/4*x^2*polylog(2,-
(c+I*(1-d))*exp(2*I*a+2*I*b*x)/(c+I*(1+d)))/b-1/4*I*x*polylog(3,-(1+I*c+d)*
exp(2*I*a+2*I*b*x)/(1+I*c-d))/b^2+1/4*I*x*polylog(3,-(c+I*(1-d))*exp(2*I*a+
2*I*b*x)/(c+I*(1+d)))/b^2+1/8*polylog(4,-(1+I*c+d)*exp(2*I*a+2*I*b*x)/(1+I*
c-d))/b^3-1/8*polylog(4,-(c+I*(1-d))*exp(2*I*a+2*I*b*x)/(c+I*(1+d)))/b^3
```

Rubi [A] time = 0.51, antiderivative size = 403, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 6, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.400, Rules used = {5176, 2190, 2531, 6609, 2282, 6589}

$$-\frac{ix\text{PolyLog}\left(3,-\frac{(ic+d+1)e^{2ia+2ibx}}{ic-d+1}\right)}{4b^2}+\frac{ix\text{PolyLog}\left(3,-\frac{(c+i(1-d))e^{2ia+2ibx}}{c+i(d+1)}\right)}{4b^2}+\frac{\text{PolyLog}\left(4,-\frac{(ic+d+1)e^{2ia+2ibx}}{ic-d+1}\right)}{8b^3}-\frac{\text{PolyLog}(\cdots}{\cdots}$$

Antiderivative was successfully verified.

```
[In] Int[x^2*ArcCot[c + d*Tan[a + b*x]],x]
```

```
[Out] (x^3*ArcCot[c + d*Tan[a + b*x]])/3 - (I/6)*x^3*Log[1 + ((1 + I*c + d)*E^((2
*I)*a + (2*I)*b*x))/(1 + I*c - d)] + (I/6)*x^3*Log[1 + ((c + I*(1 - d))*E^(
(2*I)*a + (2*I)*b*x))/(c + I*(1 + d))] - (x^2*PolyLog[2, -(((1 + I*c + d)*E
^((2*I)*a + (2*I)*b*x))/(1 + I*c - d))])/(4*b) + (x^2*PolyLog[2, -(((c + I*
(1 - d))*E^((2*I)*a + (2*I)*b*x))/(c + I*(1 + d)))])/(4*b) - ((I/4)*x*PolyL
og[3, -(((1 + I*c + d)*E^((2*I)*a + (2*I)*b*x))/(1 + I*c - d))])/b^2 + ((I/
4)*x*PolyLog[3, -(((c + I*(1 - d))*E^((2*I)*a + (2*I)*b*x))/(c + I*(1 + d))
)])/b^2 + PolyLog[4, -(((1 + I*c + d)*E^((2*I)*a + (2*I)*b*x))/(1 + I*c - d
))]/(8*b^3) - PolyLog[4, -(((c + I*(1 - d))*E^((2*I)*a + (2*I)*b*x))/(c + I
*(1 + d)))]/(8*b^3)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
```

```
, g, n}, x] && GtQ[m, 0]
```

Rule 5176

```
Int[ArcCot[(c_.) + (d_.)*Tan[(a_.) + (b_.)*(x_)]]*((e_.) + (f_.)*(x_))^(m_.
), x_Symbol] :> Simp[((e + f*x)^(m + 1)*ArcCot[c + d*Tan[a + b*x]])/(f*(m +
 1)), x] + (-Dist[(b*(1 - I*c - d))/(f*(m + 1)), Int[((e + f*x)^(m + 1)*E^(
2*I*a + 2*I*b*x))/(1 - I*c + d + (1 - I*c - d)*E^(2*I*a + 2*I*b*x)), x], x]
 + Dist[(b*(1 + I*c + d))/(f*(m + 1)), Int[((e + f*x)^(m + 1)*E^(2*I*a + 2*
I*b*x))/(1 + I*c - d + (1 + I*c + d)*E^(2*I*a + 2*I*b*x)), x], x]) /; FreeQ
[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[(c + I*d)^2, -1]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6609

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[((e + f*x)^m*PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p])/(b*c*p*Log[F]), x] - Dist[(f*m)/(b*c*p*Log[F]), Int[(e + f*x)^
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
 d, e, f, n, p}, x] && GtQ[m, 0]
```

Rubi steps

$$\int x^2\cot^{-1}(c+d\tan(a+bx))\,dx=\frac{1}{3}x^3\cot^{-1}(c+d\tan(a+bx))-\frac{1}{3}(b(1-ic-d))\int\frac{e^{2ia+2ibx}x^3}{1-ic+d+(1-ic-d)e^{2ia+}}$$

$$=\frac{1}{3}x^3\cot^{-1}(c+d\tan(a+bx))-\frac{1}{6}ix^3\log\left(1+\frac{(1+ic+d)e^{2ia+2ibx}}{1+ic-d}\right)+\frac{1}{6}ix^3\log$$

$$=\frac{1}{3}x^3\cot^{-1}(c+d\tan(a+bx))-\frac{1}{6}ix^3\log\left(1+\frac{(1+ic+d)e^{2ia+2ibx}}{1+ic-d}\right)+\frac{1}{6}ix^3\log$$

$$=\frac{1}{3}x^3\cot^{-1}(c+d\tan(a+bx))-\frac{1}{6}ix^3\log\left(1+\frac{(1+ic+d)e^{2ia+2ibx}}{1+ic-d}\right)+\frac{1}{6}ix^3\log$$

$$=\frac{1}{3}x^3\cot^{-1}(c+d\tan(a+bx))-\frac{1}{6}ix^3\log\left(1+\frac{(1+ic+d)e^{2ia+2ibx}}{1+ic-d}\right)+\frac{1}{6}ix^3\log$$

$$=\frac{1}{3}x^3\cot^{-1}(c+d\tan(a+bx))-\frac{1}{6}ix^3\log\left(1+\frac{(1+ic+d)e^{2ia+2ibx}}{1+ic-d}\right)+\frac{1}{6}ix^3\log$$

Mathematica [A] time = 0.89, size = 363, normalized size = 0.90

$$\frac{1}{3}x^3\cot^{-1}(d\tan(a+bx)+c)+\frac{-4ib^3x^3\log\left(1+\frac{(c-i(d+1))e^{2i(a+bx)}}{c+i(d-1)}\right)+4ib^3x^3\log\left(1+\frac{(c-id+i)e^{2i(a+bx)}}{c+i(d+1)}\right)-6b^2x^2\text{Li}_2\left(-\frac{(c-i(d}{c+}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*ArcCot[c + d*Tan[a + b*x]],x]
```

```
[Out] (x^3*ArcCot[c + d*Tan[a + b*x]])/3 + ((-4*I)*b^3*x^3*Log[1 + ((c - I*(1 + d
))*E^((2*I)*(a + b*x)))/(c + I*(-1 + d))] + (4*I)*b^3*x^3*Log[1 + ((I + c -
 I*d)*E^((2*I)*(a + b*x)))/(c + I*(1 + d))] - 6*b^2*x^2*PolyLog[2, -(((c -
I*(1 + d))*E^((2*I)*(a + b*x)))/(c + I*(-1 + d)))] + 6*b^2*x^2*PolyLog[2, -
(((I + c - I*d)*E^((2*I)*(a + b*x)))/(c + I*(1 + d)))] - (6*I)*b*x*PolyLog[
3, -(((c - I*(1 + d))*E^((2*I)*(a + b*x)))/(c + I*(-1 + d)))] + (6*I)*b*x*P
olyLog[3, -(((I + c - I*d)*E^((2*I)*(a + b*x)))/(c + I*(1 + d)))] + 3*PolyL
og[4, -(((c - I*(1 + d))*E^((2*I)*(a + b*x)))/(c + I*(-1 + d)))] - 3*PolyLo
g[4, -(((I + c - I*d)*E^((2*I)*(a + b*x)))/(c + I*(1 + d)))])/(24*b^3)
```

fricas [C] time = 0.81, size = 1973, normalized size = 4.90

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*arccot(c+d*tan(b*x+a)),x, algorithm="fricas")
```

```
[Out] 1/48*(16*b^3*x^3*arccot(d*tan(b*x + a) + c) - 6*b^2*x^2*dilog((2*(I*c*d - d
^2 + d)*tan(b*x + a)^2 - 2*c^2 - 2*I*c*d - (-2*I*c^2 + 4*c*d + 2*I*d^2 - 2*
I)*tan(b*x + a) + 2*d - 2)/((c^2 + d^2 - 2*d + 1)*tan(b*x + a)^2 + c^2 + d^
2 - 2*d + 1) + 1) + 6*b^2*x^2*dilog((2*(I*c*d - d^2 - d)*tan(b*x + a)^2 - 2
*c^2 - 2*I*c*d - (-2*I*c^2 + 4*c*d + 2*I*d^2 - 2*I)*tan(b*x + a) - 2*d - 2)
/((c^2 + d^2 + 2*d + 1)*tan(b*x + a)^2 + c^2 + d^2 + 2*d + 1) + 1) - 6*b^2*
x^2*dilog((2*(-I*c*d - d^2 + d)*tan(b*x + a)^2 - 2*c^2 + 2*I*c*d - (2*I*c^2
 + 4*c*d - 2*I*d^2 + 2*I)*tan(b*x + a) + 2*d - 2)/((c^2 + d^2 - 2*d + 1)*ta
n(b*x + a)^2 + c^2 + d^2 - 2*d + 1) + 1) + 6*b^2*x^2*dilog((2*(-I*c*d - d^2
 - d)*tan(b*x + a)^2 - 2*c^2 + 2*I*c*d - (2*I*c^2 + 4*c*d - 2*I*d^2 + 2*I)*
tan(b*x + a) - 2*d - 2)/((c^2 + d^2 + 2*d + 1)*tan(b*x + a)^2 + c^2 + d^2 +
 2*d + 1) + 1) - 4*I*a^3*log(((I*c*d + d^2 + d)*tan(b*x + a)^2 - c^2 + I*c*
d + (I*c^2 + I*d^2 + 2*I*d + I)*tan(b*x + a) - d - 1)/(tan(b*x + a)^2 + 1))
 + 4*I*a^3*log(((I*c*d + d^2 - d)*tan(b*x + a)^2 - c^2 + I*c*d + (I*c^2 + I
*d^2 - 2*I*d + I)*tan(b*x + a) + d - 1)/(tan(b*x + a)^2 + 1)) - 4*I*a^3*log
(((I*c*d - d^2 + d)*tan(b*x + a)^2 + c^2 + I*c*d + (I*c^2 + I*d^2 - 2*I*d +
 I)*tan(b*x + a) - d + 1)/(tan(b*x + a)^2 + 1)) + 4*I*a^3*log(((I*c*d - d^2
 - d)*tan(b*x + a)^2 + c^2 + I*c*d + (I*c^2 + I*d^2 + 2*I*d + I)*tan(b*x +
a) + d + 1)/(tan(b*x + a)^2 + 1)) - 6*I*b*x*polylog(3, ((c^2 + 2*I*c*d - d^
2 + 1)*tan(b*x + a)^2 - c^2 - 2*I*c*d + d^2 + (2*I*c^2 - 4*c*d - 2*I*d^2 +
2*I)*tan(b*x + a) - 1)/((c^2 + d^2 + 2*d + 1)*tan(b*x + a)^2 + c^2 + d^2 +
2*d + 1)) + 6*I*b*x*polylog(3, ((c^2 - 2*I*c*d - d^2 + 1)*tan(b*x + a)^2 -
c^2 + 2*I*c*d + d^2 + (-2*I*c^2 - 4*c*d + 2*I*d^2 - 2*I)*tan(b*x + a) - 1)/
((c^2 + d^2 + 2*d + 1)*tan(b*x + a)^2 + c^2 + d^2 + 2*d + 1)) + 6*I*b*x*pol
ylog(3, ((c^2 + 2*I*c*d - d^2 + 1)*tan(b*x + a)^2 - c^2 - 2*I*c*d + d^2 + (
2*I*c^2 - 4*c*d - 2*I*d^2 + 2*I)*tan(b*x + a) - 1)/((c^2 + d^2 - 2*d + 1)*t
an(b*x + a)^2 + c^2 + d^2 - 2*d + 1)) - 6*I*b*x*polylog(3, ((c^2 - 2*I*c*d
- d^2 + 1)*tan(b*x + a)^2 - c^2 + 2*I*c*d + d^2 + (-2*I*c^2 - 4*c*d + 2*I*d
^2 - 2*I)*tan(b*x + a) - 1)/((c^2 + d^2 - 2*d + 1)*tan(b*x + a)^2 + c^2 + d
^2 - 2*d + 1)) + (4*I*b^3*x^3 + 4*I*a^3)*log(-(2*(I*c*d - d^2 + d)*tan(b*x
+ a)^2 - 2*c^2 - 2*I*c*d - (-2*I*c^2 + 4*c*d + 2*I*d^2 - 2*I)*tan(b*x + a)
+ 2*d - 2)/((c^2 + d^2 - 2*d + 1)*tan(b*x + a)^2 + c^2 + d^2 - 2*d + 1)) +
(-4*I*b^3*x^3 - 4*I*a^3)*log(-(2*(I*c*d - d^2 - d)*tan(b*x + a)^2 - 2*c^2 -
 2*I*c*d - (-2*I*c^2 + 4*c*d + 2*I*d^2 - 2*I)*tan(b*x + a) - 2*d - 2)/((c^2
 + d^2 + 2*d + 1)*tan(b*x + a)^2 + c^2 + d^2 + 2*d + 1)) + (-4*I*b^3*x^3 -
4*I*a^3)*log(-(2*(-I*c*d - d^2 + d)*tan(b*x + a)^2 - 2*c^2 + 2*I*c*d - (2*I
*c^2 + 4*c*d - 2*I*d^2 + 2*I)*tan(b*x + a) + 2*d - 2)/((c^2 + d^2 - 2*d + 1
)*tan(b*x + a)^2 + c^2 + d^2 - 2*d + 1)) + (4*I*b^3*x^3 + 4*I*a^3)*log(-(2*
(-I*c*d - d^2 - d)*tan(b*x + a)^2 - 2*c^2 + 2*I*c*d - (2*I*c^2 + 4*c*d - 2*
I*d^2 + 2*I)*tan(b*x + a) - 2*d - 2)/((c^2 + d^2 + 2*d + 1)*tan(b*x + a)^2
+ c^2 + d^2 + 2*d + 1)) - 3*polylog(4, ((c^2 + 2*I*c*d - d^2 + 1)*tan(b*x +
 a)^2 - c^2 - 2*I*c*d + d^2 + (2*I*c^2 - 4*c*d - 2*I*d^2 + 2*I)*tan(b*x + a
) - 1)/((c^2 + d^2 + 2*d + 1)*tan(b*x + a)^2 + c^2 + d^2 + 2*d + 1)) - 3*po
```

```
lylog(4, ((c^2 - 2*I*c*d - d^2 + 1)*tan(b*x + a)^2 - c^2 + 2*I*c*d + d^2 +
(-2*I*c^2 - 4*c*d + 2*I*d^2 - 2*I)*tan(b*x + a) - 1)/((c^2 + d^2 + 2*d + 1)
*tan(b*x + a)^2 + c^2 + d^2 + 2*d + 1)) + 3*polylog(4, ((c^2 + 2*I*c*d - d^
2 + 1)*tan(b*x + a)^2 - c^2 - 2*I*c*d + d^2 + (2*I*c^2 - 4*c*d - 2*I*d^2 +
2*I)*tan(b*x + a) - 1)/((c^2 + d^2 - 2*d + 1)*tan(b*x + a)^2 + c^2 + d^2 -
2*d + 1)) + 3*polylog(4, ((c^2 - 2*I*c*d - d^2 + 1)*tan(b*x + a)^2 - c^2 +
2*I*c*d + d^2 + (-2*I*c^2 - 4*c*d + 2*I*d^2 - 2*I)*tan(b*x + a) - 1)/((c^2
+ d^2 - 2*d + 1)*tan(b*x + a)^2 + c^2 + d^2 - 2*d + 1)))/b^3
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^2 \operatorname{arccot}(d \tan(bx + a) + c)\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*arccot(c+d*tan(b*x+a)),x, algorithm="giac")
```

```
[Out] integrate(x^2*arccot(d*tan(b*x + a) + c), x)
```

maple [C] time = 64.67, size = 8034, normalized size = 19.94

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*arccot(c+d*tan(b*x+a)),x)
```

```
[Out] result too large to display
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{6} x^3 \arctan\left(-(d+1)\cos(2\,bx+2\,a) + c\sin(2\,bx+2\,a) + d - 1, -c\cos(2\,bx+2\,a) - (d+1)\sin(2\,bx+2\,a) - c\right)\cdot$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*arccot(c+d*tan(b*x+a)),x, algorithm="maxima")
```

```
[Out] 1/6*x^3*arctan2(-(d + 1)*cos(2*b*x + 2*a) + c*sin(2*b*x + 2*a) + d - 1, -c*
cos(2*b*x + 2*a) - (d + 1)*sin(2*b*x + 2*a) - c) - 1/6*x^3*arctan2(-(d - 1)
*cos(2*b*x + 2*a) + c*sin(2*b*x + 2*a) + d + 1, -c*cos(2*b*x + 2*a) - (d -
1)*sin(2*b*x + 2*a) - c) - 4*b*d*integrate(-1/3*(2*(c^2 + d^2 + 1)*x^3*cos(
2*b*x + 2*a)^2 + 2*c*d*x^3*sin(2*b*x + 2*a) + 2*(c^2 + d^2 + 1)*x^3*sin(2*b
*x + 2*a)^2 + (c^2 - d^2 + 1)*x^3*cos(2*b*x + 2*a) - (2*c*d*x^3*sin(2*b*x +
 2*a) - (c^2 - d^2 + 1)*x^3*cos(2*b*x + 2*a))*cos(4*b*x + 4*a) + (2*c*d*x^3
*cos(2*b*x + 2*a) + (c^2 - d^2 + 1)*x^3*sin(2*b*x + 2*a))*sin(4*b*x + 4*a))
/(c^4 + d^4 + 2*(c^2 - 1)*d^2 + (c^4 + d^4 + 2*(c^2 - 1)*d^2 + 2*c^2 + 1)*c
os(4*b*x + 4*a)^2 + 4*(c^4 + d^4 + 2*(c^2 + 1)*d^2 + 2*c^2 + 1)*cos(2*b*x +
 2*a)^2 + (c^4 + d^4 + 2*(c^2 - 1)*d^2 + 2*c^2 + 1)*sin(4*b*x + 4*a)^2 + 4*
(c^4 + d^4 + 2*(c^2 + 1)*d^2 + 2*c^2 + 1)*sin(2*b*x + 2*a)^2 + 2*c^2 + 2*(c
^4 + d^4 - 2*(3*c^2 + 1)*d^2 + 2*c^2 + 2*(c^4 - d^4 + 2*c^2 + 1)*cos(2*b*x
+ 2*a) - 4*(c*d^3 + (c^3 + c)*d)*sin(2*b*x + 2*a) + 1)*cos(4*b*x + 4*a) + 4
*(c^4 - d^4 + 2*c^2 + 1)*cos(2*b*x + 2*a) - 4*(2*c*d^3 - 2*(c^3 + c)*d - 2*
(c*d^3 + (c^3 + c)*d)*cos(2*b*x + 2*a) - (c^4 - d^4 + 2*c^2 + 1)*sin(2*b*x
+ 2*a))*sin(4*b*x + 4*a) + 8*(c*d^3 + (c^3 + c)*d)*sin(2*b*x + 2*a) + 1), x
)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int x^2\,\mathrm{acot}\left(c+d\,\tan\left(a+b\,x\right)\right) \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*acot(c + d*tan(a + b*x)),x)
```

```
[Out] int(x^2*acot(c + d*tan(a + b*x)), x)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*acot(c+d*tan(b*x+a)),x)
```

```
[Out] Timed out
```

3.159 $\int x \cot^{-1}(c + d\tan(a + bx))\, dx$

Optimal. Leaf size=305

$$-\frac{i\text{Li}_3\left(-\frac{(ic+d+1)e^{2ia+2ibx}}{ic-d+1}\right)}{8b^2}+\frac{i\text{Li}_3\left(-\frac{(c+i(1-d))e^{2ia+2ibx}}{c+i(d+1)}\right)}{8b^2}-\frac{x\text{Li}_2\left(-\frac{(ic+d+1)e^{2ia+2ibx}}{ic-d+1}\right)}{4b}+\frac{x\text{Li}_2\left(-\frac{(c+i(1-d))e^{2ia+2ibx}}{c+i(d+1)}\right)}{4b}-\frac{1}{4}ix^2\log\left(1+\right.$$

```
[Out] 1/2*x^2*arccot(c+d*tan(b*x+a))-1/4*I*x^2*ln(1+(1+I*c+d)*exp(2*I*a+2*I*b*x)/
(1+I*c-d))+1/4*I*x^2*ln(1+(c+I*(1-d))*exp(2*I*a+2*I*b*x)/(c+I*(1+d)))-1/4*x
*polylog(2,-(1+I*c+d)*exp(2*I*a+2*I*b*x)/(1+I*c-d))/b+1/4*x*polylog(2,-(c+I
*(1-d))*exp(2*I*a+2*I*b*x)/(c+I*(1+d)))/b-1/8*I*polylog(3,-(1+I*c+d)*exp(2*
I*a+2*I*b*x)/(1+I*c-d))/b^2+1/8*I*polylog(3,-(c+I*(1-d))*exp(2*I*a+2*I*b*x)
/(c+I*(1+d)))/b^2
```

Rubi [A] time = 0.41, antiderivative size = 305, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 5, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.385, Rules used = {5176, 2190, 2531, 2282, 6589}

$$-\frac{i\text{PolyLog}\left(3,-\frac{(ic+d+1)e^{2ia+2ibx}}{ic-d+1}\right)}{8b^2}+\frac{i\text{PolyLog}\left(3,-\frac{(c+i(1-d))e^{2ia+2ibx}}{c+i(d+1)}\right)}{8b^2}-\frac{x\text{PolyLog}\left(2,-\frac{(ic+d+1)e^{2ia+2ibx}}{ic-d+1}\right)}{4b}+\frac{x\text{PolyLog}\left(2,\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[x*ArcCot[c + d*Tan[a + b*x]],x]
```

```
[Out] (x^2*ArcCot[c + d*Tan[a + b*x]])/2 - (I/4)*x^2*Log[1 + ((1 + I*c + d)*E^((2
*I)*a + (2*I)*b*x))/(1 + I*c - d)] + (I/4)*x^2*Log[1 + ((c + I*(1 - d))*E^(
(2*I)*a + (2*I)*b*x))/(c + I*(1 + d))] - (x*PolyLog[2, -(((1 + I*c + d)*E^(
(2*I)*a + (2*I)*b*x))/(1 + I*c - d))])/(4*b) + (x*PolyLog[2, -(((c + I*(1 -
 d))*E^((2*I)*a + (2*I)*b*x))/(c + I*(1 + d)))])/(4*b) - ((I/8)*PolyLog[3,
-(((1 + I*c + d)*E^((2*I)*a + (2*I)*b*x))/(1 + I*c - d))])/b^2 + ((I/8)*Pol
yLog[3, -(((c + I*(1 - d))*E^((2*I)*a + (2*I)*b*x))/(c + I*(1 + d)))])/b^2
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 5176

```
Int[ArcCot[(c_.) + (d_.)*Tan[(a_.) + (b_.)*(x_)]]*((e_.) + (f_.)*(x_))^(m_.
), x_Symbol] :> Simp[((e + f*x)^(m + 1)*ArcCot[c + d*Tan[a + b*x]])/(f*(m +
 1)), x] + (-Dist[(b*(1 - I*c - d))/(f*(m + 1)), Int[((e + f*x)^(m + 1)*E^(
2*I*a + 2*I*b*x))/(1 - I*c + d + (1 - I*c - d)*E^(2*I*a + 2*I*b*x)), x], x]
 + Dist[(b*(1 + I*c + d))/(f*(m + 1)), Int[((e + f*x)^(m + 1)*E^(2*I*a + 2*
I*b*x))/(1 + I*c - d + (1 + I*c + d)*E^(2*I*a + 2*I*b*x)), x], x]) /; FreeQ
[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[(c + I*d)^2, -1]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int x\cot^{-1}(c+d\tan(a+bx))\,dx=\frac{1}{2}x^2\cot^{-1}(c+d\tan(a+bx))-\frac{1}{2}(b(1-ic-d))\int\frac{e^{2ia+2ibx}x^2}{1-ic+d+(1-ic-d)e^{2}}$$

$$=\frac{1}{2}x^2\cot^{-1}(c+d\tan(a+bx))-\frac{1}{4}ix^2\log\left(1+\frac{(1+ic+d)e^{2ia+2ibx}}{1+ic-d}\right)+\frac{1}{4}ix^2\,\mathrm{lo}$$

$$=\frac{1}{2}x^2\cot^{-1}(c+d\tan(a+bx))-\frac{1}{4}ix^2\log\left(1+\frac{(1+ic+d)e^{2ia+2ibx}}{1+ic-d}\right)+\frac{1}{4}ix^2\,\mathrm{lo}$$

$$=\frac{1}{2}x^2\cot^{-1}(c+d\tan(a+bx))-\frac{1}{4}ix^2\log\left(1+\frac{(1+ic+d)e^{2ia+2ibx}}{1+ic-d}\right)+\frac{1}{4}ix^2\,\mathrm{lo}$$

$$=\frac{1}{2}x^2\cot^{-1}(c+d\tan(a+bx))-\frac{1}{4}ix^2\log\left(1+\frac{(1+ic+d)e^{2ia+2ibx}}{1+ic-d}\right)+\frac{1}{4}ix^2\,\mathrm{lo}$$

Mathematica [A] time = 0.62, size = 272, normalized size = 0.89

$$\frac{1}{2}x^2\cot^{-1}(d\tan(a+bx)+c)-\frac{i\left(2b^2x^2\log\left(1+\frac{(c-i(d+1))e^{2i(a+bx)}}{c+i(d-1)}\right)-2b^2x^2\log\left(1+\frac{(c-id+i)e^{2i(a+bx)}}{c+i(d+1)}\right)-2ibx\mathrm{Li}_2\left(-\frac{(c-i(d}{c}\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[x*ArcCot[c + d*Tan[a + b*x]],x]
```

```
[Out] (x^2*ArcCot[c + d*Tan[a + b*x]])/2 - ((I/8)*(2*b^2*x^2*Log[1 + ((c - I*(1 +
 d))*E^((2*I)*(a + b*x)))/(c + I*(-1 + d))] - 2*b^2*x^2*Log[1 + ((I + c - I
*d)*E^((2*I)*(a + b*x)))/(c + I*(1 + d))] - (2*I)*b*x*PolyLog[2, -(((c - I*
(1 + d))*E^((2*I)*(a + b*x)))/(c + I*(-1 + d)))] + (2*I)*b*x*PolyLog[2, -((
(I + c - I*d)*E^((2*I)*(a + b*x)))/(c + I*(1 + d)))] + PolyLog[3, -(((c - I
*(1 + d))*E^((2*I)*(a + b*x)))/(c + I*(-1 + d)))] - PolyLog[3, -(((I + c -
I*d)*E^((2*I)*(a + b*x)))/(c + I*(1 + d)))]))/b^2
```

fricas [C] time = 0.85, size = 1557, normalized size = 5.10

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*arccot(c+d*tan(b*x+a)),x, algorithm="fricas")
```

```
[Out] 1/16*(8*b^2*x^2*arccot(d*tan(b*x + a) + c) - 2*b*x*dilog((2*(I*c*d - d^2 +
d)*tan(b*x + a)^2 - 2*c^2 - 2*I*c*d - (-2*I*c^2 + 4*c*d + 2*I*d^2 - 2*I)*ta
n(b*x + a) + 2*d - 2)/((c^2 + d^2 - 2*d + 1)*tan(b*x + a)^2 + c^2 + d^2 - 2
*d + 1) + 1) + 2*b*x*dilog((2*(I*c*d - d^2 - d)*tan(b*x + a)^2 - 2*c^2 - 2*
I*c*d - (-2*I*c^2 + 4*c*d + 2*I*d^2 - 2*I)*tan(b*x + a) - 2*d - 2)/((c^2 +
d^2 + 2*d + 1)*tan(b*x + a)^2 + c^2 + d^2 + 2*d + 1) + 1) - 2*b*x*dilog((2*
(-I*c*d - d^2 + d)*tan(b*x + a)^2 - 2*c^2 + 2*I*c*d - (2*I*c^2 + 4*c*d - 2*
I*d^2 + 2*I)*tan(b*x + a) + 2*d - 2)/((c^2 + d^2 - 2*d + 1)*tan(b*x + a)^2
+ c^2 + d^2 - 2*d + 1) + 1) + 2*b*x*dilog((2*(-I*c*d - d^2 - d)*tan(b*x + a
)^2 - 2*c^2 + 2*I*c*d - (2*I*c^2 + 4*c*d - 2*I*d^2 + 2*I)*tan(b*x + a) - 2*
d - 2)/((c^2 + d^2 + 2*d + 1)*tan(b*x + a)^2 + c^2 + d^2 + 2*d + 1) + 1) +
2*I*a^2*log(((I*c*d + d^2 + d)*tan(b*x + a)^2 - c^2 + I*c*d + (I*c^2 + I*d^
2 + 2*I*d + I)*tan(b*x + a) - d - 1)/(tan(b*x + a)^2 + 1)) - 2*I*a^2*log(((
I*c*d + d^2 - d)*tan(b*x + a)^2 - c^2 + I*c*d + (I*c^2 + I*d^2 - 2*I*d + I)
*tan(b*x + a) + d - 1)/(tan(b*x + a)^2 + 1)) + 2*I*a^2*log(((I*c*d - d^2 +
d)*tan(b*x + a)^2 + c^2 + I*c*d + (I*c^2 + I*d^2 - 2*I*d + I)*tan(b*x + a)
- d + 1)/(tan(b*x + a)^2 + 1)) - 2*I*a^2*log(((I*c*d - d^2 - d)*tan(b*x + a
)^2 + c^2 + I*c*d + (I*c^2 + I*d^2 + 2*I*d + I)*tan(b*x + a) + d + 1)/(tan(
b*x + a)^2 + 1)) + (2*I*b^2*x^2 - 2*I*a^2)*log(-(2*(I*c*d - d^2 + d)*tan(b*
x + a)^2 - 2*c^2 - 2*I*c*d - (-2*I*c^2 + 4*c*d + 2*I*d^2 - 2*I)*tan(b*x + a
) + 2*d - 2)/((c^2 + d^2 - 2*d + 1)*tan(b*x + a)^2 + c^2 + d^2 - 2*d + 1))
+ (-2*I*b^2*x^2 + 2*I*a^2)*log(-(2*(I*c*d - d^2 - d)*tan(b*x + a)^2 - 2*c^2
 - 2*I*c*d - (-2*I*c^2 + 4*c*d + 2*I*d^2 - 2*I)*tan(b*x + a) - 2*d - 2)/((c
^2 + d^2 + 2*d + 1)*tan(b*x + a)^2 + c^2 + d^2 + 2*d + 1)) + (-2*I*b^2*x^2
+ 2*I*a^2)*log(-(2*(-I*c*d - d^2 + d)*tan(b*x + a)^2 - 2*c^2 + 2*I*c*d - (2
*I*c^2 + 4*c*d - 2*I*d^2 + 2*I)*tan(b*x + a) + 2*d - 2)/((c^2 + d^2 - 2*d +
 1)*tan(b*x + a)^2 + c^2 + d^2 - 2*d + 1)) + (2*I*b^2*x^2 - 2*I*a^2)*log(-(
2*(-I*c*d - d^2 - d)*tan(b*x + a)^2 - 2*c^2 + 2*I*c*d - (2*I*c^2 + 4*c*d -
2*I*d^2 + 2*I)*tan(b*x + a) - 2*d - 2)/((c^2 + d^2 + 2*d + 1)*tan(b*x + a)^
2 + c^2 + d^2 + 2*d + 1)) - I*polylog(3, ((c^2 + 2*I*c*d - d^2 + 1)*tan(b*x
 + a)^2 - c^2 - 2*I*c*d + d^2 + (2*I*c^2 - 4*c*d - 2*I*d^2 + 2*I)*tan(b*x +
 a) - 1)/((c^2 + d^2 + 2*d + 1)*tan(b*x + a)^2 + c^2 + d^2 + 2*d + 1)) + I*
polylog(3, ((c^2 - 2*I*c*d - d^2 + 1)*tan(b*x + a)^2 - c^2 + 2*I*c*d + d^2
+ (-2*I*c^2 - 4*c*d + 2*I*d^2 - 2*I)*tan(b*x + a) - 1)/((c^2 + d^2 + 2*d +
1)*tan(b*x + a)^2 + c^2 + d^2 + 2*d + 1)) + I*polylog(3, ((c^2 + 2*I*c*d -
d^2 + 1)*tan(b*x + a)^2 - c^2 - 2*I*c*d + d^2 + (2*I*c^2 - 4*c*d - 2*I*d^2
+ 2*I)*tan(b*x + a) - 1)/((c^2 + d^2 - 2*d + 1)*tan(b*x + a)^2 + c^2 + d^2
- 2*d + 1)) - I*polylog(3, ((c^2 - 2*I*c*d - d^2 + 1)*tan(b*x + a)^2 - c^2
+ 2*I*c*d + d^2 + (-2*I*c^2 - 4*c*d + 2*I*d^2 - 2*I)*tan(b*x + a) - 1)/((c^
2 + d^2 - 2*d + 1)*tan(b*x + a)^2 + c^2 + d^2 - 2*d + 1)))/b^2
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x \operatorname{arccot}(d \tan(bx + a) + c) \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*arccot(c+d*tan(b*x+a)),x, algorithm="giac")
```

```
[Out] integrate(x*arccot(d*tan(b*x + a) + c), x)
```

maple [C] time = 6.34, size = 7654, normalized size = 25.10

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*arccot(c+d*tan(b*x+a)),x)
```

```
[Out] result too large to display
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{4}\,x^2\arctan\left(-(d+1)\cos\left(2\,bx+2\,a\right)+c\sin\left(2\,bx+2\,a\right)+d-1,-c\cos\left(2\,bx+2\,a\right)-(d+1)\sin\left(2\,bx+2\,a\right)-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*arccot(c+d*tan(b*x+a)),x, algorithm="maxima")
```

```
[Out] 1/4*x^2*arctan2(-(d + 1)*cos(2*b*x + 2*a) + c*sin(2*b*x + 2*a) + d - 1, -c*
cos(2*b*x + 2*a) - (d + 1)*sin(2*b*x + 2*a) - c) - 1/4*x^2*arctan2(-(d - 1)
*cos(2*b*x + 2*a) + c*sin(2*b*x + 2*a) + d + 1, -c*cos(2*b*x + 2*a) - (d -
1)*sin(2*b*x + 2*a) - c) - 2*b*d*integrate(-(2*(c^2 + d^2 + 1)*x^2*cos(2*b*
x + 2*a)^2 + 2*c*d*x^2*sin(2*b*x + 2*a) + 2*(c^2 + d^2 + 1)*x^2*sin(2*b*x +
 2*a)^2 + (c^2 - d^2 + 1)*x^2*cos(2*b*x + 2*a) - (2*c*d*x^2*sin(2*b*x + 2*a
) - (c^2 - d^2 + 1)*x^2*cos(2*b*x + 2*a))*cos(4*b*x + 4*a) + (2*c*d*x^2*cos
(2*b*x + 2*a) + (c^2 - d^2 + 1)*x^2*sin(2*b*x + 2*a))*sin(4*b*x + 4*a))/(c^
4 + d^4 + 2*(c^2 - 1)*d^2 + (c^4 + d^4 + 2*(c^2 - 1)*d^2 + 2*c^2 + 1)*cos(4
*b*x + 4*a)^2 + 4*(c^4 + d^4 + 2*(c^2 + 1)*d^2 + 2*c^2 + 1)*cos(2*b*x + 2*a
)^2 + (c^4 + d^4 + 2*(c^2 - 1)*d^2 + 2*c^2 + 1)*sin(4*b*x + 4*a)^2 + 4*(c^4
 + d^4 + 2*(c^2 + 1)*d^2 + 2*c^2 + 1)*sin(2*b*x + 2*a)^2 + 2*c^2 + 2*(c^4 +
 d^4 - 2*(3*c^2 + 1)*d^2 + 2*c^2 + 2*(c^4 - d^4 + 2*c^2 + 1)*cos(2*b*x + 2*
a) - 4*(c*d^3 + (c^3 + c)*d)*sin(2*b*x + 2*a) + 1)*cos(4*b*x + 4*a) + 4*(c^
4 - d^4 + 2*c^2 + 1)*cos(2*b*x + 2*a) - 4*(2*c*d^3 - 2*(c^3 + c)*d - 2*(c*d
^3 + (c^3 + c)*d)*cos(2*b*x + 2*a) - (c^4 - d^4 + 2*c^2 + 1)*sin(2*b*x + 2*
a))*sin(4*b*x + 4*a) + 8*(c*d^3 + (c^3 + c)*d)*sin(2*b*x + 2*a) + 1), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int x\,\mathrm{acot}\left(c+d\tan\left(a+b\,x\right)\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*acot(c + d*tan(a + b*x)),x)
```

```
[Out] int(x*acot(c + d*tan(a + b*x)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*acot(c+d*tan(b*x+a)),x)
```

```
[Out] Timed out
```

3.160 $\int \cot^{-1}(c+d\tan(a+bx))\,dx$

Optimal. Leaf size=198

$$-\frac{\text{Li}_2\left(-\frac{(ic+d+1)e^{2ia+2ibx}}{ic-d+1}\right)}{4b}+\frac{\text{Li}_2\left(-\frac{(c+i(1-d))e^{2ia+2ibx}}{c+i(d+1)}\right)}{4b}-\frac{1}{2}ix\log\left(1+\frac{(ic+d+1)e^{2ia+2ibx}}{ic-d+1}\right)+\frac{1}{2}ix\log\left(1+\frac{(c+i(1-d))e^{2ia}}{c+i(d+1)}\right.$$

```
[Out] x*arccot(c+d*tan(b*x+a))-1/2*I*x*ln(1+(1+I*c+d)*exp(2*I*a+2*I*b*x)/(1+I*c-d
))+1/2*I*x*ln(1+(c+I*(1-d))*exp(2*I*a+2*I*b*x)/(c+I*(1+d)))-1/4*polylog(2,-
(1+I*c+d)*exp(2*I*a+2*I*b*x)/(1+I*c-d))/b+1/4*polylog(2,-(c+I*(1-d))*exp(2*
I*a+2*I*b*x)/(c+I*(1+d)))/b
```

Rubi [A] time = 0.24, antiderivative size = 198, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 4, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}} = 0.364$, Rules used = {5168, 2190, 2279, 2391}

$$-\frac{\text{PolyLog}\left(2,-\frac{(ic+d+1)e^{2ia+2ibx}}{ic-d+1}\right)}{4b}+\frac{\text{PolyLog}\left(2,-\frac{(c+i(1-d))e^{2ia+2ibx}}{c+i(d+1)}\right)}{4b}-\frac{1}{2}ix\log\left(1+\frac{(ic+d+1)e^{2ia+2ibx}}{ic-d+1}\right)+\frac{1}{2}ix\log\left(1+\right.$$

Antiderivative was successfully verified.

```
[In] Int[ArcCot[c + d*Tan[a + b*x]],x]
```

```
[Out] x*ArcCot[c + d*Tan[a + b*x]] - (I/2)*x*Log[1 + ((1 + I*c + d)*E^((2*I)*a +
(2*I)*b*x))/(1 + I*c - d)] + (I/2)*x*Log[1 + ((c + I*(1 - d))*E^((2*I)*a +
(2*I)*b*x))/(c + I*(1 + d))] - PolyLog[2, -(((1 + I*c + d)*E^((2*I)*a + (2*
I)*b*x))/(1 + I*c - d))]/(4*b) + PolyLog[2, -(((c + I*(1 - d))*E^((2*I)*a +
 (2*I)*b*x))/(c + I*(1 + d)))]/(4*b)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 5168

```
Int[ArcCot[(c_.) + (d_.)*Tan[(a_.) + (b_.)*(x_)]], x_Symbol] :> Simp[x*ArcC
ot[c + d*Tan[a + b*x]], x] + (-Dist[b*(1 - I*c - d), Int[(x*E^(2*I*a + 2*I*
b*x))/(1 - I*c + d + (1 - I*c - d)*E^(2*I*a + 2*I*b*x)), x], x] + Dist[b*(1
 + I*c + d), Int[(x*E^(2*I*a + 2*I*b*x))/(1 + I*c - d + (1 + I*c + d)*E^(2*
I*a + 2*I*b*x)), x], x]) /; FreeQ[{a, b, c, d}, x] && NeQ[(c + I*d)^2, -1]
```

Rubi steps

$$\int \cot^{-1}(c+d\tan(a+bx))\,dx = x\cot^{-1}(c+d\tan(a+bx)) - (b(1-ic-d))\int \frac{e^{2ia+2ibx}x}{1-ic+d+(1-ic-d)e^{2ia+2ibx}}$$

$$= x\cot^{-1}(c+d\tan(a+bx)) - \frac{1}{2}ix\log\left(1+\frac{(1+ic+d)e^{2ia+2ibx}}{1+ic-d}\right) + \frac{1}{2}ix\log\left(1+\right.$$

$$= x\cot^{-1}(c+d\tan(a+bx)) - \frac{1}{2}ix\log\left(1+\frac{(1+ic+d)e^{2ia+2ibx}}{1+ic-d}\right) + \frac{1}{2}ix\log\left(1+\right.$$

$$= x\cot^{-1}(c+d\tan(a+bx)) - \frac{1}{2}ix\log\left(1+\frac{(1+ic+d)e^{2ia+2ibx}}{1+ic-d}\right) + \frac{1}{2}ix\log\left(1+\right.$$

Mathematica [B] time = 1.76, size = 555, normalized size = 2.80

$$x\cot^{-1}(d\tan(a+bx)+c) - \frac{x\left(-i\sqrt{-d^2}\left(\text{Li}_2\left(\frac{d^2(1-i\tan(a+bx))}{d^2+icd-i\sqrt{-d^2}}\right)+\log(1-i\tan(a+bx))\log\left(\frac{d^2(-\tan(a+bx))-cd+\sqrt{-d^2}}{-cd+id^2+\sqrt{-d^2}}\right)\right.\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[ArcCot[c + d*Tan[a + b*x]],x]
```

```
[Out] x*ArcCot[c + d*Tan[a + b*x]] - (x*(-4*a*d*ArcTan[c + d*Tan[a + b*x]] - I*Sq
rt[-d^2]*(Log[1 - I*Tan[a + b*x]]*Log[(-(c*d) + Sqrt[-d^2] - d^2*Tan[a + b*
x])/(-(c*d) + I*d^2 + Sqrt[-d^2])] + PolyLog[2, (d^2*(1 - I*Tan[a + b*x]))/
(I*c*d + d^2 - I*Sqrt[-d^2])]) + I*Sqrt[-d^2]*(Log[1 - I*Tan[a + b*x]]*Log[
(c*d + Sqrt[-d^2] + d^2*Tan[a + b*x])/(c*d - I*d^2 + Sqrt[-d^2])] + PolyLog
[2, (d^2*(1 - I*Tan[a + b*x]))/(I*c*d + d^2 + I*Sqrt[-d^2])]) + I*Sqrt[-d^2
]*(Log[1 + I*Tan[a + b*x]]*Log[(c*d - Sqrt[-d^2] + d^2*Tan[a + b*x])/(c*d +
 I*d^2 - Sqrt[-d^2])] + PolyLog[2, (d^2*(1 + I*Tan[a + b*x]))/((-I)*c*d + d
^2 + I*Sqrt[-d^2])]) - I*Sqrt[-d^2]*(Log[1 + I*Tan[a + b*x]]*Log[(c*d + Sqr
t[-d^2] + d^2*Tan[a + b*x])/(c*d + I*d^2 + Sqrt[-d^2])] + PolyLog[2, (d^2*(
1 + I*Tan[a + b*x]))/(d^2 - I*(c*d + Sqrt[-d^2]))])))/(2*d*(2*a - I*Log[1 -
 I*Tan[a + b*x]] + I*Log[1 + I*Tan[a + b*x]]))
```

fricas [B] time = 1.11, size = 1117, normalized size = 5.64

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(c+d*tan(b*x+a)),x, algorithm="fricas")
```

```
[Out] 1/8*(8*b*x*arccot(d*tan(b*x + a) + c) + (2*I*b*x + 2*I*a)*log(-(2*(I*c*d -
d^2 + d)*tan(b*x + a)^2 - 2*c^2 - 2*I*c*d - (-2*I*c^2 + 4*c*d + 2*I*d^2 - 2
*I)*tan(b*x + a) + 2*d - 2)/((c^2 + d^2 - 2*d + 1)*tan(b*x + a)^2 + c^2 + d
^2 - 2*d + 1)) + (-2*I*b*x - 2*I*a)*log(-(2*(I*c*d - d^2 - d)*tan(b*x + a)^
2 - 2*c^2 - 2*I*c*d - (-2*I*c^2 + 4*c*d + 2*I*d^2 - 2*I)*tan(b*x + a) - 2*d
 - 2)/((c^2 + d^2 + 2*d + 1)*tan(b*x + a)^2 + c^2 + d^2 + 2*d + 1)) + (-2*I
*b*x - 2*I*a)*log(-(2*(-I*c*d - d^2 + d)*tan(b*x + a)^2 - 2*c^2 + 2*I*c*d -
 (2*I*c^2 + 4*c*d - 2*I*d^2 + 2*I)*tan(b*x + a) + 2*d - 2)/((c^2 + d^2 - 2*
d + 1)*tan(b*x + a)^2 + c^2 + d^2 - 2*d + 1)) + (2*I*b*x + 2*I*a)*log(-(2*(
-I*c*d - d^2 - d)*tan(b*x + a)^2 - 2*c^2 + 2*I*c*d - (2*I*c^2 + 4*c*d - 2*I
*d^2 + 2*I)*tan(b*x + a) - 2*d - 2)/((c^2 + d^2 + 2*d + 1)*tan(b*x + a)^2 +
 c^2 + d^2 + 2*d + 1)) - 2*I*a*log(((I*c*d + d^2 + d)*tan(b*x + a)^2 - c^2
+ I*c*d + (I*c^2 + I*d^2 + 2*I*d + I)*tan(b*x + a) - d - 1)/(tan(b*x + a)^2
 + 1)) + 2*I*a*log(((I*c*d + d^2 - d)*tan(b*x + a)^2 - c^2 + I*c*d + (I*c^2
```

```
 + I*d^2 - 2*I*d + I)*tan(b*x + a) + d - 1)/(tan(b*x + a)^2 + 1)) - 2*I*a*l
og(((I*c*d - d^2 + d)*tan(b*x + a)^2 + c^2 + I*c*d + (I*c^2 + I*d^2 - 2*I*d
 + I)*tan(b*x + a) - d + 1)/(tan(b*x + a)^2 + 1)) + 2*I*a*log(((I*c*d - d^2
 - d)*tan(b*x + a)^2 + c^2 + I*c*d + (I*c^2 + I*d^2 + 2*I*d + I)*tan(b*x +
a) + d + 1)/(tan(b*x + a)^2 + 1)) - dilog((2*(I*c*d - d^2 + d)*tan(b*x + a)
^2 - 2*c^2 - 2*I*c*d - (-2*I*c^2 + 4*c*d + 2*I*d^2 - 2*I)*tan(b*x + a) + 2*
d - 2)/((c^2 + d^2 - 2*d + 1)*tan(b*x + a)^2 + c^2 + d^2 - 2*d + 1) + 1) +
dilog((2*(I*c*d - d^2 - d)*tan(b*x + a)^2 - 2*c^2 - 2*I*c*d - (-2*I*c^2 + 4
*c*d + 2*I*d^2 - 2*I)*tan(b*x + a) - 2*d - 2)/((c^2 + d^2 + 2*d + 1)*tan(b*
x + a)^2 + c^2 + d^2 + 2*d + 1) + 1) - dilog((2*(-I*c*d - d^2 + d)*tan(b*x
+ a)^2 - 2*c^2 + 2*I*c*d - (2*I*c^2 + 4*c*d - 2*I*d^2 + 2*I)*tan(b*x + a) +
 2*d - 2)/((c^2 + d^2 - 2*d + 1)*tan(b*x + a)^2 + c^2 + d^2 - 2*d + 1) + 1)
 + dilog((2*(-I*c*d - d^2 - d)*tan(b*x + a)^2 - 2*c^2 + 2*I*c*d - (2*I*c^2
+ 4*c*d - 2*I*d^2 + 2*I)*tan(b*x + a) - 2*d - 2)/((c^2 + d^2 + 2*d + 1)*tan
(b*x + a)^2 + c^2 + d^2 + 2*d + 1) + 1))/b
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \operatorname{arccot}\left(d\tan\left(bx+a\right)+c\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(c+d*tan(b*x+a)),x, algorithm="giac")
```

```
[Out] integrate(arccot(d*tan(b*x + a) + c), x)
```

maple [B] time = 1.02, size = 1142, normalized size = 5.77

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arccot(c+d*tan(b*x+a)),x)
```

```
[Out] 1/b*arctan(tan(b*x+a))*arccot(c+d*tan(b*x+a))+1/b*arctan(d*((c+d*tan(b*x+a)
)/d-c/d)+c)*arctan((c+d*tan(b*x+a))/d-c/d)-1/2*I*d/b*ln(1-(-I*d+I+c)*(1+I*(
d*((c+d*tan(b*x+a))/d-c/d)+c))^2/((d*((c+d*tan(b*x+a))/d-c/d)+c)^2+1)/(I*d+
I-c))*arctan(d*((c+d*tan(b*x+a))/d-c/d)+c)/(1+I*c+d)-1/2*I/b*ln(1-(-I*d+I+c
)*(1+I*(d*((c+d*tan(b*x+a))/d-c/d)+c))^2/((d*((c+d*tan(b*x+a))/d-c/d)+c)^2+
1)/(I*d+I-c))*arctan(d*((c+d*tan(b*x+a))/d-c/d)+c)/(1+I*c+d)-1/2*I/b/(-I*d-
I+c)*ln(1-(-I*d+I+c)*(1+I*(d*((c+d*tan(b*x+a))/d-c/d)+c))^2/((d*((c+d*tan(b
*x+a))/d-c/d)+c)^2+1)/(I*d+I-c))*arctan(d*((c+d*tan(b*x+a))/d-c/d)+c)*c-1/2
*d/b*arctan(d*((c+d*tan(b*x+a))/d-c/d)+c)^2/(1+I*c+d)-1/4*d/b*polylog(2,(-I
*d+I+c)*(1+I*(d*((c+d*tan(b*x+a))/d-c/d)+c))^2/((d*((c+d*tan(b*x+a))/d-c/d)
+c)^2+1)/(I*d+I-c))/(1+I*c+d)-1/2/b*arctan(d*((c+d*tan(b*x+a))/d-c/d)+c)^2/
(1+I*c+d)-1/2/b/(-I*d-I+c)*arctan(d*((c+d*tan(b*x+a))/d-c/d)+c)^2*c-1/4/b*p
olylog(2,(-I*d+I+c)*(1+I*(d*((c+d*tan(b*x+a))/d-c/d)+c))^2/((d*((c+d*tan(b*
x+a))/d-c/d)+c)^2+1)/(I*d+I-c))/(1+I*c+d)-1/4/b/(-I*d-I+c)*polylog(2,(-I*d+
I+c)*(1+I*(d*((c+d*tan(b*x+a))/d-c/d)+c))^2/((d*((c+d*tan(b*x+a))/d-c/d)+c)
^2+1)/(I*d+I-c))*c+1/2*I/b*arctan(d*((c+d*tan(b*x+a))/d-c/d)+c)*ln(1-(I+I*d
+c)*(1+I*(d*((c+d*tan(b*x+a))/d-c/d)+c))^2/((d*((c+d*tan(b*x+a))/d-c/d)+c)^
2+1)/(-I*d+I-c))+1/2/b*arctan(d*((c+d*tan(b*x+a))/d-c/d)+c)^2+1/4/b*polylog
(2,(I+I*d+c)*(1+I*(d*((c+d*tan(b*x+a))/d-c/d)+c))^2/((d*((c+d*tan(b*x+a))/d
-c/d)+c)^2+1)/(-I*d+I-c))
```

maxima [B] time = 0.54, size = 433, normalized size = 2.19

$$-\frac{d\left(\frac{8\,(bx+a)\arctan\left(\frac{d^2\tan(bx+a)+cd}{d}\right)}{d} - \frac{4\,(bx+a)\arctan\left(\frac{cd+\left(d^2+d\right)\tan(bx+a)}{c^2+d^2+2\,d+1}, \frac{cd\tan(bx+a)+c^2+d+1}{c^2+d^2+2\,d+1}\right) - 4\,(bx+a)\arctan\left(\frac{cd+\left(d^2-d\right)\tan(bx+a)}{c^2+d^2-2\,d+1}, \frac{cd\tan(bx+a)+c^2-\cdots}{c^2+d^2-2\,d+1}\right)\cdots}{\cdots}\right)}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(c+d*tan(b*x+a)),x, algorithm="maxima")
```

```
[Out] -1/8*(d*(8*(b*x + a)*arctan((d^2*tan(b*x + a) + c*d)/d)/d - (4*(b*x + a)*ar
ctan2((c*d + (d^2 + d)*tan(b*x + a))/(c^2 + d^2 + 2*d + 1), (c*d*tan(b*x +
a) + c^2 + d + 1)/(c^2 + d^2 + 2*d + 1)) - 4*(b*x + a)*arctan2((c*d + (d^2
- d)*tan(b*x + a))/(c^2 + d^2 - 2*d + 1), (c*d*tan(b*x + a) + c^2 - d + 1)/
(c^2 + d^2 - 2*d + 1)) + log(tan(b*x + a)^2 + 1)*log((d^2*tan(b*x + a)^2 +
2*c*d*tan(b*x + a) + c^2 + 1)/(c^2 + d^2 + 2*d + 1)) - log(tan(b*x + a)^2 +
 1)*log((d^2*tan(b*x + a)^2 + 2*c*d*tan(b*x + a) + c^2 + 1)/(c^2 + d^2 - 2*
d + 1)) + 2*dilog(-(I*d*tan(b*x + a) - d)/(I*c + d + 1)) - 2*dilog(-(I*d*ta
n(b*x + a) - d)/(I*c + d - 1)) + 2*dilog((I*d*tan(b*x + a) + d)/(-I*c + d +
 1)) - 2*dilog((I*d*tan(b*x + a) + d)/(-I*c + d - 1)))/d) - 8*(b*x + a)*arc
cot(d*tan(b*x + a) + c) - 8*(b*x + a)*arctan((d^2*tan(b*x + a) + c*d)/d))/b
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \mathrm{acot}\left(c+d\tan\left(a+b\,x\right)\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(acot(c + d*tan(a + b*x)),x)
```

```
[Out] int(acot(c + d*tan(a + b*x)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \operatorname{acot}{\left(c + d \tan{\left(a + bx \right)} \right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(acot(c+d*tan(b*x+a)),x)
```

```
[Out] Integral(acot(c + d*tan(a + b*x)), x)
```

3.161 $\int \frac{\cot^{-1}(c+d\tan(a+bx))}{x}\,dx$

Optimal. Leaf size=18

$$\mathrm{Int}\left(\frac{\cot^{-1}(d\tan(a+bx)+c)}{x},x\right)$$

```
[Out] CannotIntegrate(arccot(c+d*tan(b*x+a))/x,x)
```

Rubi [A] time = 0.07, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\cot^{-1}(c+d\tan(a+bx))}{x}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[ArcCot[c + d*Tan[a + b*x]]/x,x]
[Out] Defer[Int][ArcCot[c + d*Tan[a + b*x]]/x, x]
```

Rubi steps

$$\int \frac{\cot^{-1}(c+d\tan(a+bx))}{x}\,dx = \int \frac{\cot^{-1}(c+d\tan(a+bx))}{x}\,dx$$

Mathematica [A] time = 0.41, size = 0, normalized size = 0.00

$$\int \frac{\cot^{-1}(c+d\tan(a+bx))}{x}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[ArcCot[c + d*Tan[a + b*x]]/x,x]
[Out] Integrate[ArcCot[c + d*Tan[a + b*x]]/x, x]
```

fricas [A] time = 0.50, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{\mathrm{arccot}\left(d\tan\left(bx+a\right)+c\right)}{x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(c+d*tan(b*x+a))/x,x, algorithm="fricas")
[Out] integral(arccot(d*tan(b*x + a) + c)/x, x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\mathrm{arccot}\left(d\tan\left(bx+a\right)+c\right)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(c+d*tan(b*x+a))/x,x, algorithm="giac")
[Out] integrate(arccot(d*tan(b*x + a) + c)/x, x)
```

maple [A] time = 1.19, size = 0, normalized size = 0.00

$$\int \frac{\mathrm{arccot}\left(c+d\tan\left(bx+a\right)\right)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arccot(c+d*tan(b*x+a))/x,x)
[Out] int(arccot(c+d*tan(b*x+a))/x,x)
```

maxima [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(c+d*tan(b*x+a))/x,x, algorithm="maxima")
[Out] Timed out
```

mupad [A] time = 0.00, size = -1, normalized size = -0.06

$$\int \frac{\mathrm{acot}\left(c+d\,\tan\left(a+b\,x\right)\right)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(acot(c + d*tan(a + b*x))/x,x)
[Out] int(acot(c + d*tan(a + b*x))/x, x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{acot}{\left(c+d\tan{\left(a+bx\right)}\right)}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(acot(c+d*tan(b*x+a))/x,x)
[Out] Integral(acot(c + d*tan(a + b*x))/x, x)
```

3.162 $\int x^2 \cot^{-1}(c + (1 + ic)\tan(a + bx))\, dx$

Optimal. Leaf size=154

$$-\frac{\text{Li}_4\left(ice^{2ia+2ibx}\right)}{8b^3}+\frac{ix\text{Li}_3\left(ice^{2ia+2ibx}\right)}{4b^2}+\frac{x^2\text{Li}_2\left(ice^{2ia+2ibx}\right)}{4b}+\frac{1}{6}ix^3\log\left(1-ice^{2ia+2ibx}\right)+\frac{1}{3}x^3\cot^{-1}(c+(1+ic)\tan(a+bx$$

```
[Out] 1/12*b*x^4+1/3*x^3*arccot(c+(1+I*c)*tan(b*x+a))+1/6*I*x^3*ln(1-I*c*exp(2*I*
a+2*I*b*x))+1/4*x^2*polylog(2,I*c*exp(2*I*a+2*I*b*x))/b+1/4*I*x*polylog(3,I
*c*exp(2*I*a+2*I*b*x))/b^2-1/8*polylog(4,I*c*exp(2*I*a+2*I*b*x))/b^3
```

Rubi [A] time = 0.25, antiderivative size = 154, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 7, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333, Rules used = {5172, 2184, 2190, 2531, 6609, 2282, 6589}

$$\frac{ix\text{PolyLog}\left(3,ice^{2ia+2ibx}\right)}{4b^2}-\frac{\text{PolyLog}\left(4,ice^{2ia+2ibx}\right)}{8b^3}+\frac{x^2\text{PolyLog}\left(2,ice^{2ia+2ibx}\right)}{4b}+\frac{1}{6}ix^3\log\left(1-ice^{2ia+2ibx}\right)+\frac{1}{3}x^3\text{co}$$

Antiderivative was successfully verified.

```
[In] Int[x^2*ArcCot[c + (1 + I*c)*Tan[a + b*x]],x]
```

```
[Out] (b*x^4)/12 + (x^3*ArcCot[c + (1 + I*c)*Tan[a + b*x]])/3 + (I/6)*x^3*Log[1 -
 I*c*E^((2*I)*a + (2*I)*b*x)] + (x^2*PolyLog[2, I*c*E^((2*I)*a + (2*I)*b*x)
])/(4*b) + ((I/4)*x*PolyLog[3, I*c*E^((2*I)*a + (2*I)*b*x)])/b^2 - PolyLog[
4, I*c*E^((2*I)*a + (2*I)*b*x)]/(8*b^3)
```

Rule 2184

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x
_))))^(n_.)), x_Symbol] :> Simp[(c + d*x)^(m + 1)/(a*d*(m + 1)), x] - Dist[
b/a, Int[((c + d*x)^m*(F^(g*(e + f*x)))^n)/(a + b*(F^(g*(e + f*x)))^n), x],
 x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 5172

```
Int[ArcCot[(c_.) + (d_.)*Tan[(a_.) + (b_.)*(x_)]]*((e_.) + (f_.)*(x_))^(m_.
), x_Symbol] :> Simp[((e + f*x)^(m + 1)*ArcCot[c + d*Tan[a + b*x]])/(f*(m +
 1)), x] + Dist[(I*b)/(f*(m + 1)), Int[(e + f*x)^(m + 1)/(c + I*d + c*E^(2*
I*a + 2*I*b*x)), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && Eq
Q[(c + I*d)^2, -1]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6609

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[((e + f*x)^m*PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p])/(b*c*p*Log[F]), x] - Dist[(f*m)/(b*c*p*Log[F]), Int[(e + f*x)^
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
 d, e, f, n, p}, x] && GtQ[m, 0]
```

Rubi steps

$$\int x^2 \cot^{-1}(c+(1+ic)\tan(a+bx))\,dx = \frac{1}{3}x^3\cot^{-1}(c+(1+ic)\tan(a+bx)) + \frac{1}{3}(ib)\int \frac{x^3}{i(1+ic)+c+ce^{2ia+2ib}}$$

$$= \frac{bx^4}{12} + \frac{1}{3}x^3\cot^{-1}(c+(1+ic)\tan(a+bx)) - \frac{1}{3}(bc)\int \frac{e^{2ia+2ibx}x}{i(1+ic)+c+c}$$

$$= \frac{bx^4}{12} + \frac{1}{3}x^3\cot^{-1}(c+(1+ic)\tan(a+bx)) + \frac{1}{6}ix^3\log\left(1-ice^{2ia+2ibx}\right)$$

$$= \frac{bx^4}{12} + \frac{1}{3}x^3\cot^{-1}(c+(1+ic)\tan(a+bx)) + \frac{1}{6}ix^3\log\left(1-ice^{2ia+2ibx}\right)$$

$$= \frac{bx^4}{12} + \frac{1}{3}x^3\cot^{-1}(c+(1+ic)\tan(a+bx)) + \frac{1}{6}ix^3\log\left(1-ice^{2ia+2ibx}\right)$$

$$= \frac{bx^4}{12} + \frac{1}{3}x^3\cot^{-1}(c+(1+ic)\tan(a+bx)) + \frac{1}{6}ix^3\log\left(1-ice^{2ia+2ibx}\right)$$

$$= \frac{bx^4}{12} + \frac{1}{3}x^3\cot^{-1}(c+(1+ic)\tan(a+bx)) + \frac{1}{6}ix^3\log\left(1-ice^{2ia+2ibx}\right)$$

Mathematica [A] time = 0.26, size = 136, normalized size = 0.88

$$\frac{1}{24}\left(\frac{3\text{Li}_4\left(-\frac{ie^{-2i(a+bx)}}{c}\right)}{b^3} + \frac{6ix\text{Li}_3\left(-\frac{ie^{-2i(a+bx)}}{c}\right)}{b^2} - \frac{6x^2\text{Li}_2\left(-\frac{ie^{-2i(a+bx)}}{c}\right)}{b} + 4ix^3\log\left(1+\frac{ie^{-2i(a+bx)}}{c}\right) + 8x^3\cot^{-1}(c+(\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*ArcCot[c + (1 + I*c)*Tan[a + b*x]],x]
```

```
[Out] (8*x^3*ArcCot[c + (1 + I*c)*Tan[a + b*x]] + (4*I)*x^3*Log[1 + I/(c*E^((2*I)
*(a + b*x)))] - (6*x^2*PolyLog[2, (-I)/(c*E^((2*I)*(a + b*x)))])/b + ((6*I)
*x*PolyLog[3, (-I)/(c*E^((2*I)*(a + b*x)))])/b^2 + (3*PolyLog[4, (-I)/(c*E^
((2*I)*(a + b*x)))])/b^3)/24
```

fricas [C] time = 0.59, size = 319, normalized size = 2.07

$$b^4x^4 - 2i\,b^3x^3 \log\left(\frac{\left(ce^{(2i\,bx+2i\,a)}+i\right)e^{(-2i\,bx-2i\,a)}}{c-i}\right) + 6\,b^2x^2\mathrm{Li}_2\left(\frac{1}{2}\,\sqrt{4i\,c}\,e^{(i\,bx+i\,a)}\right) + 6\,b^2x^2\mathrm{Li}_2\left(-\frac{1}{2}\,\sqrt{4i\,c}\,e^{(i\,bx+i\,a)}\right) - a^4 - 2i\,$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*arccot(c+(1+I*c)*tan(b*x+a)),x, algorithm="fricas")
```

```
[Out] 1/12*(b^4*x^4 - 2*I*b^3*x^3*log((c*e^(2*I*b*x + 2*I*a) + I)*e^(-2*I*b*x - 2
*I*a)/(c - I)) + 6*b^2*x^2*dilog(1/2*sqrt(4*I*c)*e^(I*b*x + I*a)) + 6*b^2*x
^2*dilog(-1/2*sqrt(4*I*c)*e^(I*b*x + I*a)) - a^4 - 2*I*a^3*log(1/2*(2*c*e^(
I*b*x + I*a) + I*sqrt(4*I*c))/c) - 2*I*a^3*log(1/2*(2*c*e^(I*b*x + I*a) - I
*sqrt(4*I*c))/c) + 12*I*b*x*polylog(3, 1/2*sqrt(4*I*c)*e^(I*b*x + I*a)) + 1
2*I*b*x*polylog(3, -1/2*sqrt(4*I*c)*e^(I*b*x + I*a)) + (2*I*b^3*x^3 + 2*I*a
^3)*log(1/2*sqrt(4*I*c)*e^(I*b*x + I*a) + 1) + (2*I*b^3*x^3 + 2*I*a^3)*log(
-1/2*sqrt(4*I*c)*e^(I*b*x + I*a) + 1) - 12*polylog(4, 1/2*sqrt(4*I*c)*e^(I*
b*x + I*a)) - 12*polylog(4, -1/2*sqrt(4*I*c)*e^(I*b*x + I*a)))/b^3
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^2 \operatorname{arccot}\left((i\,c+1)\tan\left(bx+a\right)+c\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*arccot(c+(1+I*c)*tan(b*x+a)),x, algorithm="giac")
```

```
[Out] integrate(x^2*arccot((I*c + 1)*tan(b*x + a) + c), x)
```

maple [C] time = 6.49, size = 1526, normalized size = 9.91

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*arccot(c+(1+I*c)*tan(b*x+a)),x)
```

```
[Out] 1/12*x^3*Pi*csgn(I/(exp(2*I*(b*x+a))+1))*csgn(I*(c-I))*csgn(I*(c-I)/(exp(2*
I*(b*x+a))+1))+1/12*x^3*Pi*csgn(I*exp(2*I*(b*x+a)))*csgn(I*(c-I)/(exp(2*I*(
b*x+a))+1))*csgn(I*exp(2*I*(b*x+a))*(c-I)/(exp(2*I*(b*x+a))+1))-1/4/b^3*pol
ylog(2,I*c*exp(2*I*(b*x+a)))*a^2+1/2/b^3*a^2*dilog(1-I*exp(I*(b*x+a))*(-I*c
)^(1/2))+1/2/b^3*a^2*dilog(1+I*exp(I*(b*x+a))*(-I*c)^(1/2))+1/4*x^2*polylog
(2,I*c*exp(2*I*(b*x+a)))/b+1/12*b*x^4-1/12*x^3*Pi*csgn(I*exp(2*I*(b*x+a)))*
csgn(I*exp(2*I*(b*x+a))*(c-I)/(exp(2*I*(b*x+a))+1))^2-1/12*x^3*Pi*csgn(I*(c
-I)/(exp(2*I*(b*x+a))+1))*csgn(I*exp(2*I*(b*x+a))*(c-I)/(exp(2*I*(b*x+a))+1
))^2+1/12*x^3*Pi*csgn(I*exp(I*(b*x+a)))^2*csgn(I*exp(2*I*(b*x+a)))-1/6*x^3*
Pi*csgn(I*exp(I*(b*x+a)))*csgn(I*exp(2*I*(b*x+a)))^2-1/3*I/b^3*ln(1-I*exp(2
*I*(b*x+a))*c)*a^3+1/2*I/b^3*a^3*ln(1-I*exp(I*(b*x+a))*(-I*c)^(1/2))-1/6*I/
b^3*a^3*ln(exp(2*I*(b*x+a))*c+I)+1/2*I/b^3*a^3*ln(1+I*exp(I*(b*x+a))*(-I*c)
^(1/2))+1/4*I*x*polylog(3,I*c*exp(2*I*(b*x+a)))/b^2+1/12*x^3*Pi*csgn(I*exp(
2*I*(b*x+a))*(c-I)/(exp(2*I*(b*x+a))+1))^3-1/8*polylog(4,I*c*exp(2*I*(b*x+a
)))/b^3-1/2*I/b^2*ln(1-I*exp(2*I*(b*x+a))*c)*x*a^2+1/2*I/b^2*a^2*ln(1+I*exp
(I*(b*x+a))*(-I*c)^(1/2))*x+1/2*I/b^2*a^2*ln(1-I*exp(I*(b*x+a))*(-I*c)^(1/2
))*x+1/6*I*x^3*ln(1-I*exp(2*I*(b*x+a))*c)-1/12*x^3*Pi*csgn(I*(exp(2*I*(b*x+
a))*c+I)/(exp(2*I*(b*x+a))+1))^3-1/12*x^3*Pi*csgn(exp(2*I*(b*x+a))*(c-I)/(e
xp(2*I*(b*x+a))+1))^3-1/12*x^3*Pi*csgn((exp(2*I*(b*x+a))*c+I)/(exp(2*I*(b*x
+a))+1))^3+1/12*x^3*Pi*csgn(exp(2*I*(b*x+a))*(c-I)/(exp(2*I*(b*x+a))+1))^2+
1/12*x^3*Pi*csgn((exp(2*I*(b*x+a))*c+I)/(exp(2*I*(b*x+a))+1))^2+1/3*I*x^3*l
n(exp(I*(b*x+a)))-1/12*x^3*Pi*csgn(I*(c-I))*csgn(I*(c-I)/(exp(2*I*(b*x+a))+
1))^2+1/6*I*x^3*ln(c-I)+1/12*x^3*Pi*csgn(I*exp(2*I*(b*x+a)))^3-1/6*I*x^3*ln
```

```
(exp(2*I*(b*x+a))*c+I)+1/12*x^3*Pi*csgn(I*(c-I)/(exp(2*I*(b*x+a))+1))^3+1/1
2*x^3*Pi*csgn(I*exp(2*I*(b*x+a))*(c-I)/(exp(2*I*(b*x+a))+1))*csgn(exp(2*I*(
b*x+a))*(c-I)/(exp(2*I*(b*x+a))+1))-1/12*x^3*Pi*csgn(I*exp(2*I*(b*x+a))*(c-
I)/(exp(2*I*(b*x+a))+1))*csgn(exp(2*I*(b*x+a))*(c-I)/(exp(2*I*(b*x+a))+1))^
2-1/12*x^3*Pi*csgn(I*(exp(2*I*(b*x+a))*c+I)/(exp(2*I*(b*x+a))+1))*csgn((exp
(2*I*(b*x+a))*c+I)/(exp(2*I*(b*x+a))+1))+1/12*x^3*Pi*csgn(I*(exp(2*I*(b*x+a
))*c+I)/(exp(2*I*(b*x+a))+1))*csgn((exp(2*I*(b*x+a))*c+I)/(exp(2*I*(b*x+a))
+1))^2-1/12*x^3*Pi*csgn(I/(exp(2*I*(b*x+a))+1))*csgn(I*(c-I)/(exp(2*I*(b*x+
a))+1))^2-1/12*x^3*Pi*csgn(I/(exp(2*I*(b*x+a))+1))*csgn(I*(exp(2*I*(b*x+a))
*c+I))*csgn(I*(exp(2*I*(b*x+a))*c+I)/(exp(2*I*(b*x+a))+1))+1/12*x^3*Pi*csgn
(I/(exp(2*I*(b*x+a))+1))*csgn(I*(exp(2*I*(b*x+a))*c+I)/(exp(2*I*(b*x+a))+1)
)^2+1/12*x^3*Pi*csgn(I*(exp(2*I*(b*x+a))*c+I))*csgn(I*(exp(2*I*(b*x+a))*c+I
)/(exp(2*I*(b*x+a))+1))^2
```

maxima [B] time = 0.37, size = 309, normalized size = 2.01

$$\frac{\frac{\left((bx+a)^3-3\,(bx+a)^2a+3\,(bx+a)a^2\right)\operatorname{arccot}((i\,c+1)\tan(bx+a)+c)}{b^2}-\frac{3\left(-3i\,(bx+a)^4+12i\,(bx+a)^3a-18i\,(bx+a)^2a^2+\left(-8i\,(bx+a)^3+18i\,(bx+a)^2a-18i\,(bx\right.\right.}{}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*arccot(c+(1+I*c)*tan(b*x+a)),x, algorithm="maxima")
```

```
[Out] 1/3*(((b*x + a)^3 - 3*(b*x + a)^2*a + 3*(b*x + a)*a^2)*arccot((I*c + 1)*tan
(b*x + a) + c)/b^2 - 3*(-3*I*(b*x + a)^4 + 12*I*(b*x + a)^3*a - 18*I*(b*x +
 a)^2*a^2 + (-8*I*(b*x + a)^3 + 18*I*(b*x + a)^2*a - 18*I*(b*x + a)*a^2)*ar
ctan2(c*cos(2*b*x + 2*a), c*sin(2*b*x + 2*a) + 1) + (-12*I*(b*x + a)^2 + 18
*I*(b*x + a)*a - 9*I*a^2)*dilog(I*c*e^(2*I*b*x + 2*I*a)) + (4*(b*x + a)^3 -
 9*(b*x + a)^2*a + 9*(b*x + a)*a^2)*log(c^2*cos(2*b*x + 2*a)^2 + c^2*sin(2*
b*x + 2*a)^2 + 2*c*sin(2*b*x + 2*a) + 1) + 3*(4*b*x + a)*polylog(3, I*c*e^(
2*I*b*x + 2*I*a)) + 6*I*polylog(4, I*c*e^(2*I*b*x + 2*I*a)))*(-I*c - 1)/(b^
2*(12*c - 12*I)))/b
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int x^2\,\mathrm{acot}\left(c+\tan\left(a+b\,x\right)\,\left(1+c\,1\mathrm{i}\right)\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*acot(c + tan(a + b*x)*(c*1i + 1)),x)
```

```
[Out] int(x^2*acot(c + tan(a + b*x)*(c*1i + 1)), x)
```

sympy [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: CoercionFailed

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*acot(c+(1+I*c)*tan(b*x+a)),x)
```

```
[Out] Exception raised: CoercionFailed
```

3.163 $\int x \cot^{-1}(c+(1+ic)\tan(a+bx))\,dx$

Optimal. Leaf size=123

$$\frac{i\text{Li}_3\left(ice^{2ia+2ibx}\right)}{8b^2}+\frac{x\text{Li}_2\left(ice^{2ia+2ibx}\right)}{4b}+\frac{1}{4}ix^2\log\left(1-ice^{2ia+2ibx}\right)+\frac{1}{2}x^2\cot^{-1}(c+(1+ic)\tan(a+bx))+\frac{bx^3}{6}$$

```
[Out] 1/6*b*x^3+1/2*x^2*arccot(c+(1+I*c)*tan(b*x+a))+1/4*I*x^2*ln(1-I*c*exp(2*I*a
+2*I*b*x))+1/4*x*polylog(2,I*c*exp(2*I*a+2*I*b*x))/b+1/8*I*polylog(3,I*c*ex
p(2*I*a+2*I*b*x))/b^2
```

Rubi [A] time = 0.22, antiderivative size = 123, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.316, Rules used = {5172, 2184, 2190, 2531, 2282, 6589}

$$\frac{i\text{PolyLog}\left(3,ice^{2ia+2ibx}\right)}{8b^2}+\frac{x\text{PolyLog}\left(2,ice^{2ia+2ibx}\right)}{4b}+\frac{1}{4}ix^2\log\left(1-ice^{2ia+2ibx}\right)+\frac{1}{2}x^2\cot^{-1}(c+(1+ic)\tan(a+bx))+\frac{b}{}$$

Antiderivative was successfully verified.

```
[In] Int[x*ArcCot[c + (1 + I*c)*Tan[a + b*x]],x]
```

```
[Out] (b*x^3)/6 + (x^2*ArcCot[c + (1 + I*c)*Tan[a + b*x]])/2 + (I/4)*x^2*Log[1 -
I*c*E^((2*I)*a + (2*I)*b*x)] + (x*PolyLog[2, I*c*E^((2*I)*a + (2*I)*b*x)])/
(4*b) + ((I/8)*PolyLog[3, I*c*E^((2*I)*a + (2*I)*b*x)])/b^2
```

Rule 2184

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x
_))))^(n_.)), x_Symbol] :> Simp[(c + d*x)^(m + 1)/(a*d*(m + 1)), x] - Dist[
b/a, Int[((c + d*x)^m*(F^(g*(e + f*x)))^n)/(a + b*(F^(g*(e + f*x)))^n), x],
 x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] && !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] && !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 5172

```
Int[ArcCot[(c_.) + (d_.)*Tan[(a_.) + (b_.)*(x_)]]*((e_.) + (f_.)*(x_))^(m_.
), x_Symbol] :> Simp[((e + f*x)^(m + 1)*ArcCot[c + d*Tan[a + b*x]])/(f*(m +
```

```
 1)), x] + Dist[(I*b)/(f*(m + 1)), Int[(e + f*x)^(m + 1)/(c + I*d + c*E^(2*
I*a + 2*I*b*x)), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && Eq
Q[(c + I*d)^2, -1]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int x\cot^{-1}(c+(1+ic)\tan(a+bx))\,dx=\frac{1}{2}x^2\cot^{-1}(c+(1+ic)\tan(a+bx))+\frac{1}{2}(ib)\int\frac{x^2}{i(1+ic)+c+ce^{2ia+2ibx}}$$

$$=\frac{bx^3}{6}+\frac{1}{2}x^2\cot^{-1}(c+(1+ic)\tan(a+bx))-\frac{1}{2}(bc)\int\frac{e^{2ia+2ibx}x^2}{i(1+ic)+c+ce}$$

$$=\frac{bx^3}{6}+\frac{1}{2}x^2\cot^{-1}(c+(1+ic)\tan(a+bx))+\frac{1}{4}ix^2\log\left(1-ice^{2ia+2ibx}\right)-$$

$$=\frac{bx^3}{6}+\frac{1}{2}x^2\cot^{-1}(c+(1+ic)\tan(a+bx))+\frac{1}{4}ix^2\log\left(1-ice^{2ia+2ibx}\right)-$$

$$=\frac{bx^3}{6}+\frac{1}{2}x^2\cot^{-1}(c+(1+ic)\tan(a+bx))+\frac{1}{4}ix^2\log\left(1-ice^{2ia+2ibx}\right)-$$

$$=\frac{bx^3}{6}+\frac{1}{2}x^2\cot^{-1}(c+(1+ic)\tan(a+bx))+\frac{1}{4}ix^2\log\left(1-ice^{2ia+2ibx}\right)-$$

Mathematica [A] time = 0.11, size = 110, normalized size = 0.89

$$\frac{i\left(2b^2x^2\log\left(1+\frac{ie^{-2i(a+bx)}}{c}\right)+2ibx\text{Li}_2\left(-\frac{ie^{-2i(a+bx)}}{c}\right)+\text{Li}_3\left(-\frac{ie^{-2i(a+bx)}}{c}\right)\right)}{8b^2}+\frac{1}{2}x^2\cot^{-1}(c+(1+ic)\tan(a+bx))$$

Antiderivative was successfully verified.

```
[In] Integrate[x*ArcCot[c + (1 + I*c)*Tan[a + b*x]],x]
```

```
[Out] (x^2*ArcCot[c + (1 + I*c)*Tan[a + b*x]])/2 + ((I/8)*(2*b^2*x^2*Log[1 + I/(c
*E^((2*I)*(a + b*x)))] + (2*I)*b*x*PolyLog[2, (-I)/(c*E^((2*I)*(a + b*x)))]
 + PolyLog[3, (-I)/(c*E^((2*I)*(a + b*x)))]))/b^2
```

fricas [C] time = 0.72, size = 268, normalized size = 2.18

$$2b^3x^3-3ib^2x^2\log\left(\frac{\left(ce^{(2ibx+2ia)}+i\right)e^{(-2ibx-2ia)}}{c-i}\right)+2a^3+6bx\text{Li}_2\left(\frac{1}{2}\sqrt{4ic}\,e^{(ibx+ia)}\right)+6bx\text{Li}_2\left(-\frac{1}{2}\sqrt{4ic}\,e^{(ibx+ia)}\right)+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*arccot(c+(1+I*c)*tan(b*x+a)),x, algorithm="fricas")
```

```
[Out] 1/12*(2*b^3*x^3 - 3*I*b^2*x^2*log((c*e^(2*I*b*x + 2*I*a) + I)*e^(-2*I*b*x -
 2*I*a)/(c - I)) + 2*a^3 + 6*b*x*dilog(1/2*sqrt(4*I*c)*e^(I*b*x + I*a)) + 6
*b*x*dilog(-1/2*sqrt(4*I*c)*e^(I*b*x + I*a)) + 3*I*a^2*log(1/2*(2*c*e^(I*b*
x + I*a) + I*sqrt(4*I*c))/c) + 3*I*a^2*log(1/2*(2*c*e^(I*b*x + I*a) - I*sqr
t(4*I*c))/c) + (3*I*b^2*x^2 - 3*I*a^2)*log(1/2*sqrt(4*I*c)*e^(I*b*x + I*a)
+ 1) + (3*I*b^2*x^2 - 3*I*a^2)*log(-1/2*sqrt(4*I*c)*e^(I*b*x + I*a) + 1) +
```

```
6*I*polylog(3, 1/2*sqrt(4*I*c)*e^(I*b*x + I*a)) + 6*I*polylog(3, -1/2*sqrt(
4*I*c)*e^(I*b*x + I*a)))/b^2
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x \operatorname{arccot}\left((i\,c+1)\tan\left(bx+a\right)+c\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*arccot(c+(1+I*c)*tan(b*x+a)),x, algorithm="giac")
```

```
[Out] integrate(x*arccot((I*c + 1)*tan(b*x + a) + c), x)
```

maple [C] time = 5.68, size = 1491, normalized size = 12.12

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*arccot(c+(1+I*c)*tan(b*x+a)),x)
```

```
[Out] 1/2*I*x^2*ln(exp(I*(b*x+a)))-1/8*x^2*Pi*csgn(I*(exp(2*I*(b*x+a))*c+I)/(exp(
2*I*(b*x+a))+1))*csgn((exp(2*I*(b*x+a))*c+I)/(exp(2*I*(b*x+a))+1))+1/4/b^2*
polylog(2,I*c*exp(2*I*(b*x+a)))*a-1/2/b^2*a*dilog(1-I*exp(I*(b*x+a))*(-I*c)
^(1/2))-1/2/b^2*a*dilog(1+I*exp(I*(b*x+a))*(-I*c)^(1/2))+1/2*I/b*ln(1-I*exp
(2*I*(b*x+a))*c)*x*a-1/4*I*x^2*ln(exp(2*I*(b*x+a))*c+I)+1/4*I/b^2*a^2*ln(ex
p(2*I*(b*x+a))*c+I)-1/2*I/b^2*a^2*ln(1-I*exp(I*(b*x+a))*(-I*c)^(1/2))-1/2*I
/b^2*a^2*ln(1+I*exp(I*(b*x+a))*(-I*c)^(1/2))+1/8*x^2*Pi*csgn(I*(exp(2*I*(b*
x+a))*c+I)/(exp(2*I*(b*x+a))+1))*csgn((exp(2*I*(b*x+a))*c+I)/(exp(2*I*(b*x+
a))+1))^2-1/8*x^2*Pi*csgn(I/(exp(2*I*(b*x+a))+1))*csgn(I*(c-I)/(exp(2*I*(b*
x+a))+1))^2-1/8*x^2*Pi*csgn(I*(c-I))*csgn(I*(c-I)/(exp(2*I*(b*x+a))+1))^2-1
/8*x^2*Pi*csgn(exp(2*I*(b*x+a))*(c-I)/(exp(2*I*(b*x+a))+1))^3+1/8*x^2*Pi*cs
gn((exp(2*I*(b*x+a))*c+I)/(exp(2*I*(b*x+a))+1))^2+1/8*x^2*Pi*csgn(exp(2*I*(
b*x+a))*(c-I)/(exp(2*I*(b*x+a))+1))^2-1/8*x^2*Pi*csgn((exp(2*I*(b*x+a))*c+I
)/(exp(2*I*(b*x+a))+1))^3-1/8*x^2*Pi*csgn(I*exp(2*I*(b*x+a)))*csgn(I*exp(2*
I*(b*x+a))*(c-I)/(exp(2*I*(b*x+a))+1))^2-1/8*x^2*Pi*csgn(I*(c-I)/(exp(2*I*(
b*x+a))+1))*csgn(I*exp(2*I*(b*x+a))*(c-I)/(exp(2*I*(b*x+a))+1))^2+1/8*x^2*P
i*csgn(I/(exp(2*I*(b*x+a))+1))*csgn(I*(exp(2*I*(b*x+a))*c+I)/(exp(2*I*(b*x+
a))+1))^2+1/8*x^2*Pi*csgn(I*exp(2*I*(b*x+a))*(c-I)/(exp(2*I*(b*x+a))+1))^3+
1/8*x^2*Pi*csgn(I*exp(I*(b*x+a)))^2*csgn(I*exp(2*I*(b*x+a)))-1/4*x^2*Pi*csg
n(I*exp(I*(b*x+a)))*csgn(I*exp(2*I*(b*x+a)))^2-1/8*x^2*Pi*csgn(I*(exp(2*I*(
b*x+a))*c+I)/(exp(2*I*(b*x+a))+1))^3+1/8*x^2*Pi*csgn(I*exp(2*I*(b*x+a)))^3+
1/8*x^2*Pi*csgn(I*(c-I)/(exp(2*I*(b*x+a))+1))^3-1/2*I/b*a*ln(1-I*exp(I*(b*x
+a))*(-I*c)^(1/2))*x-1/2*I/b*a*ln(1+I*exp(I*(b*x+a))*(-I*c)^(1/2))*x+1/8*x^
2*Pi*csgn(I*(exp(2*I*(b*x+a))*c+I))*csgn(I*(exp(2*I*(b*x+a))*c+I)/(exp(2*I*
(b*x+a))+1))^2+1/4*x*polylog(2,I*c*exp(2*I*(b*x+a)))/b+1/6*b*x^3+1/8*x^2*Pi
*csgn(I*exp(2*I*(b*x+a))*(c-I)/(exp(2*I*(b*x+a))+1))*csgn(exp(2*I*(b*x+a))*
(c-I)/(exp(2*I*(b*x+a))+1))+1/4*I/b^2*ln(1-I*exp(2*I*(b*x+a))*c)*a^2+1/8*I*
polylog(3,I*c*exp(2*I*(b*x+a)))/b^2+1/4*I*x^2*ln(c-I)+1/8*x^2*Pi*csgn(I*exp
(2*I*(b*x+a)))*csgn(I*(c-I)/(exp(2*I*(b*x+a))+1))*csgn(I*exp(2*I*(b*x+a))*(
c-I)/(exp(2*I*(b*x+a))+1))-1/8*x^2*Pi*csgn(I/(exp(2*I*(b*x+a))+1))*csgn(I*(
exp(2*I*(b*x+a))*c+I))*csgn(I*(exp(2*I*(b*x+a))*c+I)/(exp(2*I*(b*x+a))+1))+
1/8*x^2*Pi*csgn(I/(exp(2*I*(b*x+a))+1))*csgn(I*(c-I))*csgn(I*(c-I)/(exp(2*I
*(b*x+a))+1))+1/4*I*x^2*ln(1-I*exp(2*I*(b*x+a))*c)-1/8*x^2*Pi*csgn(I*exp(2*
I*(b*x+a))*(c-I)/(exp(2*I*(b*x+a))+1))*csgn(exp(2*I*(b*x+a))*(c-I)/(exp(2*I
*(b*x+a))+1))^2
```

maxima [B] time = 0.34, size = 218, normalized size = 1.77

$$\frac{\frac{\left((bx+a)^2-2\,(bx+a)a\right)\operatorname{arccot}\left((i\,c+1)\tan(bx+a)+c\right)}{b}-\frac{2\left(-4i\,(bx+a)^3+12i\,(bx+a)^2a-6i\,bx\operatorname{Li}_2\left(i\,ce^{(2i\,bx+2i\,a)}\right)+\left(-6i\,(bx+a)^2+12i\,(bx+a)a\right)\arctan(c\cos(2\,b}{}}{2\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*arccot(c+(1+I*c)*tan(b*x+a)),x, algorithm="maxima")
```

```
[Out] 1/2*(((b*x + a)^2 - 2*(b*x + a)*a)*arccot((I*c + 1)*tan(b*x + a) + c)/b - 2
*(-4*I*(b*x + a)^3 + 12*I*(b*x + a)^2*a - 6*I*b*x*dilog(I*c*e^(2*I*b*x + 2*
I*a)) + (-6*I*(b*x + a)^2 + 12*I*(b*x + a)*a)*arctan2(c*cos(2*b*x + 2*a), c
*sin(2*b*x + 2*a) + 1) + 3*((b*x + a)^2 - 2*(b*x + a)*a)*log(c^2*cos(2*b*x
+ 2*a)^2 + c^2*sin(2*b*x + 2*a)^2 + 2*c*sin(2*b*x + 2*a) + 1) + 3*polylog(3
, I*c*e^(2*I*b*x + 2*I*a)))*(-I*c - 1)/(b*(12*c - 12*I)))/b
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int x\,\mathrm{acot}\left(c+\tan\left(a+b\,x\right)\,\left(1+c\,1\mathrm{i}\right)\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*acot(c + tan(a + b*x)*(c*1i + 1)),x)
```

```
[Out] int(x*acot(c + tan(a + b*x)*(c*1i + 1)), x)
```

sympy [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: CoercionFailed

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*acot(c+(1+I*c)*tan(b*x+a)),x)
```

```
[Out] Exception raised: CoercionFailed
```

3.164 $\int \cot^{-1}(c+(1+ic)\tan(a+bx))\,dx$

Optimal. Leaf size=85

$$\frac{\text{Li}_2\left(ice^{2ia+2ibx}\right)}{4b}+\frac{1}{2}ix\log\left(1-ice^{2ia+2ibx}\right)+x\cot^{-1}(c+(1+ic)\tan(a+bx))+\frac{bx^2}{2}$$

```
[Out] 1/2*b*x^2+x*arccot(c+(1+I*c)*tan(b*x+a))+1/2*I*x*ln(1-I*c*exp(2*I*a+2*I*b*x
))+1/4*polylog(2,I*c*exp(2*I*a+2*I*b*x))/b
```

Rubi [A] time = 0.13, antiderivative size = 85, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.294, Rules used = {5164, 2184, 2190, 2279, 2391}

$$\frac{\text{PolyLog}\left(2,ice^{2ia+2ibx}\right)}{4b}+\frac{1}{2}ix\log\left(1-ice^{2ia+2ibx}\right)+x\cot^{-1}(c+(1+ic)\tan(a+bx))+\frac{bx^2}{2}$$

Antiderivative was successfully verified.

```
[In] Int[ArcCot[c + (1 + I*c)*Tan[a + b*x]],x]
```

```
[Out] (b*x^2)/2 + x*ArcCot[c + (1 + I*c)*Tan[a + b*x]] + (I/2)*x*Log[1 - I*c*E^((
2*I)*a + (2*I)*b*x)] + PolyLog[2, I*c*E^((2*I)*a + (2*I)*b*x)]/(4*b)
```

Rule 2184

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x
_))))^(n_.)), x_Symbol] :> Simp[(c + d*x)^(m + 1)/(a*d*(m + 1)), x] - Dist[
b/a, Int[((c + d*x)^m*(F^(g*(e + f*x)))^n)/(a + b*(F^(g*(e + f*x)))^n), x],
 x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 5164

```
Int[ArcCot[(c_.) + (d_.)*Tan[(a_.) + (b_.)*(x_)]], x_Symbol] :> Simp[x*ArcC
ot[c + d*Tan[a + b*x]], x] + Dist[I*b, Int[x/(c + I*d + c*E^(2*I*a + 2*I*b*
x)), x], x] /; FreeQ[{a, b, c, d}, x] && EqQ[(c + I*d)^2, -1]
```

Rubi steps

$$\int \cot^{-1}(c+(1+ic)\tan(a+bx))\,dx = x\cot^{-1}(c+(1+ic)\tan(a+bx)) + (ib)\int \frac{x}{i(1+ic)+c+ce^{2ia+2ibx}}\,dx$$

$$= \frac{bx^2}{2} + x\cot^{-1}(c+(1+ic)\tan(a+bx)) - (bc)\int \frac{e^{2ia+2ibx}x}{i(1+ic)+c+ce^{2ia+2ib}}$$

$$= \frac{bx^2}{2} + x\cot^{-1}(c+(1+ic)\tan(a+bx)) + \frac{1}{2}ix\log\left(1-ice^{2ia+2ibx}\right) - \frac{1}{2}i$$

Sub

$$= \frac{bx^2}{2} + x\cot^{-1}(c+(1+ic)\tan(a+bx)) + \frac{1}{2}ix\log\left(1-ice^{2ia+2ibx}\right) -$$

$$= \frac{bx^2}{2} + x\cot^{-1}(c+(1+ic)\tan(a+bx)) + \frac{1}{2}ix\log\left(1-ice^{2ia+2ibx}\right) + \frac{\mathrm{Li}_2}{}$$

Mathematica [B] time = 5.58, size = 967, normalized size = 11.38

$$x\cot^{-1}(c+(ic+1)\tan(a+bx)) - \frac{}{((c+i)\cos(a+bx)+(ic+1)\sin(a+bx))\left(\log(i\tan(bx)+1)\tan(bx)\cos^2(a)+\right.}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[ArcCot[c + (1 + I*c)*Tan[a + b*x]],x]
```

```
[Out] x*ArcCot[c + (1 + I*c)*Tan[a + b*x]] - (I*x*((2*I)*b*x*Log[2*Cos[b*x]*(Cos[
b*x] - I*Sin[b*x])] - Log[(Sec[b*x]*(Cos[a] - I*Sin[a])*((I + c)*Cos[a + b*
x] + (1 + I*c)*Sin[a + b*x]))/(2*c)]*Log[1 - I*Tan[b*x]] + Log[(Sec[b*x]*((
1 - I*c)*Cos[a + b*x] + (-I + c)*Sin[a + b*x]))/(2*Cos[a] - (2*I)*Sin[a])]*
Log[1 + I*Tan[b*x]] - PolyLog[2, -Cos[2*b*x] + I*Sin[2*b*x]] - PolyLog[2, (
Sec[b*x]*((-I + c)*Cos[a] + I*(I + c)*Sin[a])*(Cos[a + b*x] - I*Sin[a + b*x
]))/(2*c)] + PolyLog[2, (Sec[b*x]*((1 + I*c)*Cos[a] - (I + c)*Sin[a])*(Cos[
a + b*x] + I*Sin[a + b*x]))/2])*Sec[a + b*x]^2*(Cos[b*x] + I*Sin[b*x])*(I*C
os[b*x] + Sin[b*x])*((1 - I*c)*Cos[a + b*x] + (-I + c)*Sin[a + b*x]))/(((I
+ c)*Cos[a + b*x] + (1 + I*c)*Sin[a + b*x])*(2*b*x - I*Log[1 - (Sec[b*x]*((
-I + c)*Cos[a] + I*(I + c)*Sin[a])*(Cos[a + b*x] - I*Sin[a + b*x]))/(2*c)]
- I*Log[1 + (Sec[b*x]*((-1 - I*c)*Cos[a] + (I + c)*Sin[a])*(Cos[a + b*x] +
I*Sin[a + b*x]))/2] - (I*(-I + c)*Cos[a + b*x]*(Log[1 - I*Tan[b*x]] - Log[1
 + I*Tan[b*x]]))/((I + c)*Cos[a + b*x] + (1 + I*c)*Sin[a + b*x]) + ((I + c)
*(Log[1 - I*Tan[b*x]] - Log[1 + I*Tan[b*x]])*Sin[a + b*x])/((I + c)*Cos[a +
 b*x] + (1 + I*c)*Sin[a + b*x]) - (2*I)*b*x*Tan[b*x] + Log[1 - (Sec[b*x]*((
-I + c)*Cos[a] + I*(I + c)*Sin[a])*(Cos[a + b*x] - I*Sin[a + b*x]))/(2*c)]*
Tan[b*x] - Log[1 + (Sec[b*x]*((-1 - I*c)*Cos[a] + (I + c)*Sin[a])*(Cos[a +
b*x] + I*Sin[a + b*x]))/2]*Tan[b*x] - Log[1 - I*Tan[b*x]]*Tan[b*x] + Cos[a]
^2*Log[1 + I*Tan[b*x]]*Tan[b*x] + Log[1 + I*Tan[b*x]]*Sin[a]^2*Tan[b*x] + (
Log[(Sec[b*x]*((1 - I*c)*Cos[a + b*x] + (-I + c)*Sin[a + b*x]))/(2*Cos[a] -
 (2*I)*Sin[a])]*Sec[b*x]^2)/(-I + Tan[b*x]) - (Log[(Sec[b*x]*(Cos[a] - I*Si
n[a])*((I + c)*Cos[a + b*x] + (1 + I*c)*Sin[a + b*x]))/(2*c)]*Sec[b*x]^2)/(
I + Tan[b*x]))*(-I + Tan[a + b*x])*(1 - I*c + (-I + c)*Tan[a + b*x]))
```

fricas [B] time = 0.68, size = 199, normalized size = 2.34

$$\frac{b^2x^2 - i\,bx\log\left(\frac{\left(ce^{(2i\,bx+2i\,a)}+i\right)e^{(-2i\,bx-2i\,a)}}{c-i}\right) - a^2 + (i\,bx+i\,a)\log\left(\frac{1}{2}\sqrt{4i\,c}\,e^{(i\,bx+i\,a)}+1\right) + (i\,bx+i\,a)\log\left(-\frac{1}{2}\sqrt{4i\,c}\,e\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(c+(1+I*c)*tan(b*x+a)),x, algorithm="fricas")
```

```
[Out] 1/2*(b^2*x^2 - I*b*x*log((c*e^(2*I*b*x + 2*I*a) + I)*e^(-2*I*b*x - 2*I*a)/(
c - I)) - a^2 + (I*b*x + I*a)*log(1/2*sqrt(4*I*c)*e^(I*b*x + I*a) + 1) + (I
*b*x + I*a)*log(-1/2*sqrt(4*I*c)*e^(I*b*x + I*a) + 1) - I*a*log(1/2*(2*c*e^
(I*b*x + I*a) + I*sqrt(4*I*c))/c) - I*a*log(1/2*(2*c*e^(I*b*x + I*a) - I*sq
rt(4*I*c))/c) + dilog(1/2*sqrt(4*I*c)*e^(I*b*x + I*a)) + dilog(-1/2*sqrt(4*
I*c)*e^(I*b*x + I*a)))/b
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \operatorname{arccot}\left((i\,c+1)\tan\left(bx+a\right)+c\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(c+(1+I*c)*tan(b*x+a)),x, algorithm="giac")
```

```
[Out] integrate(arccot((I*c + 1)*tan(b*x + a) + c), x)
```

maple [B] time = 0.61, size = 1489, normalized size = 17.52

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arccot(c+(1+I*c)*tan(b*x+a)),x)
```

```
[Out] -1/4*I/(1+I*c)/b/(I-c)*dilog(-1/2*I*(I+c+(1+I*c)*tan(b*x+a)))*c^2+1/8*I/(1+
I*c)/b/(I-c)*ln(c+(1+I*c)*tan(b*x+a)-I)^2*c^2+1/2/(1+I*c)/b/(I-c)*ln(-c+(1+
I*c)*tan(b*x+a)+I)*ln(1/2*(I+c+(1+I*c)*tan(b*x+a))/c)*c-1/2/(1+I*c)/b/(I-c)
*ln(-c+(1+I*c)*tan(b*x+a)+I)*ln((c+(1+I*c)*tan(b*x+a)-I)/(-2*I+2*c))*c-1/4*
I/(1+I*c)/b/(I-c)*ln(-c+(1+I*c)*tan(b*x+a)+I)*ln(1/2*(I+c+(1+I*c)*tan(b*x+a
))/c)+1/4*I/(1+I*c)/b/(I-c)*ln(-c+(1+I*c)*tan(b*x+a)+I)*ln((c+(1+I*c)*tan(b
*x+a)-I)/(-2*I+2*c))+1/4*I/(1+I*c)/b/(I-c)*ln(c+(1+I*c)*tan(b*x+a)-I)*ln(-1
/2*I*(I+c+(1+I*c)*tan(b*x+a)))+1/4*I/(1+I*c)/b/(I-c)*dilog(1/2*(I+c+(1+I*c)
*tan(b*x+a))/c)*c^2-1/4*I/(1+I*c)/b/(I-c)*dilog((c+(1+I*c)*tan(b*x+a)-I)/(-
2*I+2*c))*c^2-1/2/(1+I*c)/b/(I-c)*ln(c+(1+I*c)*tan(b*x+a)-I)*ln(-1/2*I*(I+c
+(1+I*c)*tan(b*x+a)))*c-1/2/(1+I*c)/b/(I-c)*dilog(-1/2*I*(I+c+(1+I*c)*tan(b
*x+a)))*c-1/(1+I*c)/b*arccot(c+(1+I*c)*tan(b*x+a))/(2*I-2*c)*ln(c+(1+I*c)*t
an(b*x+a)-I)*c^2+1/(1+I*c)/b*arccot(c+(1+I*c)*tan(b*x+a))/(2*I-2*c)*ln(-c+(
1+I*c)*tan(b*x+a)+I)*c^2+1/4/(1+I*c)/b/(I-c)*ln(c+(1+I*c)*tan(b*x+a)-I)^2*c
+1/2/(1+I*c)/b/(I-c)*dilog(1/2*(I+c+(1+I*c)*tan(b*x+a))/c)*c-1/2/(1+I*c)/b/
(I-c)*dilog((c+(1+I*c)*tan(b*x+a)-I)/(-2*I+2*c))*c+1/(1+I*c)/b*arccot(c+(1+
I*c)*tan(b*x+a))/(2*I-2*c)*ln(c+(1+I*c)*tan(b*x+a)-I)-1/(1+I*c)/b*arccot(c+
(1+I*c)*tan(b*x+a))/(2*I-2*c)*ln(-c+(1+I*c)*tan(b*x+a)+I)+1/4*I/(1+I*c)/b/(
I-c)*dilog((c+(1+I*c)*tan(b*x+a)-I)/(-2*I+2*c))+1/4*I/(1+I*c)/b/(I-c)*dilog
(-1/2*I*(I+c+(1+I*c)*tan(b*x+a)))-1/8*I/(1+I*c)/b/(I-c)*ln(c+(1+I*c)*tan(b*
x+a)-I)^2-1/4*I/(1+I*c)/b/(I-c)*dilog(1/2*(I+c+(1+I*c)*tan(b*x+a))/c)+2*I/(
1+I*c)/b*arccot(c+(1+I*c)*tan(b*x+a))/(2*I-2*c)*ln(c+(1+I*c)*tan(b*x+a)-I)*
c-2*I/(1+I*c)/b*arccot(c+(1+I*c)*tan(b*x+a))/(2*I-2*c)*ln(-c+(1+I*c)*tan(b*
x+a)+I)*c-1/4*I/(1+I*c)/b/(I-c)*ln(c+(1+I*c)*tan(b*x+a)-I)*ln(-1/2*I*(I+c+(
1+I*c)*tan(b*x+a)))*c^2+1/4*I/(1+I*c)/b/(I-c)*ln(-c+(1+I*c)*tan(b*x+a)+I)*l
n(1/2*(I+c+(1+I*c)*tan(b*x+a))/c)*c^2-1/4*I/(1+I*c)/b/(I-c)*ln(-c+(1+I*c)*t
an(b*x+a)+I)*ln((c+(1+I*c)*tan(b*x+a)-I)/(-2*I+2*c))*c^2
```

maxima [B] time = 0.45, size = 455, normalized size = 5.35

$$-\frac{(-i\,c-1)\left(\frac{4i\,(bx+a)\log\left(\frac{2i\,c^2-2\left(c^2-2i\,c-1\right)\tan(bx+a)+4\,c-2i}{2i\,c^2-2\left(c^2-2i\,c-1\right)\tan(bx+a)+2i}\right)}{i\,c+1}-\frac{i\left(4\,(bx+a)\left(\log\left(-i\,c^2+\left(c^2-2i\,c-1\right)\tan(bx+a)-2\,c+i\right)-\log\left(-i\,c^2+\left(c^2-2i\,c-1\right)\tan(bx+\right.\right.\right.}{}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(c+(1+I*c)*tan(b*x+a)),x, algorithm="maxima")
```

```
[Out] -1/8*((-I*c - 1)*(4*I*(b*x + a)*log((2*I*c^2 - 2*(c^2 - 2*I*c - 1)*tan(b*x
+ a) + 4*c - 2*I)/(2*I*c^2 - 2*(c^2 - 2*I*c - 1)*tan(b*x + a) + 2*I))/(I*c
+ 1) - I*(4*(b*x + a)*(log(-I*c^2 + (c^2 - 2*I*c - 1)*tan(b*x + a) - 2*c +
I) - log(-I*c^2 + (c^2 - 2*I*c - 1)*tan(b*x + a) - I)) + I*log(-I*c^2 + (c^
2 - 2*I*c - 1)*tan(b*x + a) - 2*c + I)^2 - 2*I*log(-I*c^2 + (c^2 - 2*I*c -
1)*tan(b*x + a) - I)*log(-1/2*(c - I)*tan(b*x + a) + 1/2*I*c + 1/2) + 2*I*l
og(-I*c^2 + (c^2 - 2*I*c - 1)*tan(b*x + a) - I)*log(-1/2*((I*c + 1)*tan(b*x
 + a) + c + I)/c + 1) - 2*I*log(-I*c^2 + (c^2 - 2*I*c - 1)*tan(b*x + a) - 2
*c + I)*log(-1/2*I*tan(b*x + a) + 1/2) - 2*I*dilog(1/2*(c - I)*tan(b*x + a)
 - 1/2*I*c + 1/2) + 2*I*dilog(1/2*((I*c + 1)*tan(b*x + a) + c + I)/c) - 2*I
*dilog(1/2*I*tan(b*x + a) + 1/2))/(I*c + 1)) - 8*(b*x + a)*arccot((I*c + 1)
*tan(b*x + a) + c) - 4*(b*x + a)*(c - I)*log((2*I*c^2 - 2*(c^2 - 2*I*c - 1)
*tan(b*x + a) + 4*c - 2*I)/(2*I*c^2 - 2*(c^2 - 2*I*c - 1)*tan(b*x + a) + 2*
I))/(I*c + 1))/b
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \mathrm{acot}\left(c+\tan\left(a+b\,x\right)\,\left(1+c\,1\mathrm{i}\right)\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(acot(c + tan(a + b*x)*(c*1i + 1)),x)
```

```
[Out] int(acot(c + tan(a + b*x)*(c*1i + 1)), x)
```

sympy [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: CoercionFailed

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(acot(c+(1+I*c)*tan(b*x+a)),x)
```

```
[Out] Exception raised: CoercionFailed
```

3.165 $\int \frac{\cot^{-1}(c+(1+ic)\tan(a+bx))}{x}\,dx$

Optimal. Leaf size=24

$$\text{Int}\left(\frac{\cot^{-1}(c+(1+ic)\tan(a+bx))}{x},x\right)$$

```
[Out] CannotIntegrate(arccot(c+(1+I*c)*tan(b*x+a))/x,x)
```

Rubi [A] time = 0.10, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\cot^{-1}(c+(1+ic)\tan(a+bx))}{x}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[ArcCot[c + (1 + I*c)*Tan[a + b*x]]/x,x]
[Out] Defer[Int][ArcCot[c + (1 + I*c)*Tan[a + b*x]]/x, x]
```

Rubi steps

$$\int \frac{\cot^{-1}(c+(1+ic)\tan(a+bx))}{x}\,dx = \int \frac{\cot^{-1}(c+(1+ic)\tan(a+bx))}{x}\,dx$$

Mathematica [A] time = 0.36, size = 0, normalized size = 0.00

$$\int \frac{\cot^{-1}(c+(1+ic)\tan(a+bx))}{x}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[ArcCot[c + (1 + I*c)*Tan[a + b*x]]/x,x]
[Out] Integrate[ArcCot[c + (1 + I*c)*Tan[a + b*x]]/x, x]
```

fricas [A] time = 0.77, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{i\log\left(\frac{\left(ce^{(2i\,bx+2i\,a)}+i\right)e^{(-2i\,bx-2i\,a)}}{c-i}\right)}{2\,x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(c+(1+I*c)*tan(b*x+a))/x,x, algorithm="fricas")
[Out] integral(-1/2*I*log((c*e^(2*I*b*x + 2*I*a) + I)*e^(-2*I*b*x - 2*I*a)/(c - I
))/x, x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{arccot}\left((i\,c+1)\tan\left(bx+a\right)+c\right)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(c+(1+I*c)*tan(b*x+a))/x,x, algorithm="giac")
```

```
[Out] integrate(arccot((I*c + 1)*tan(b*x + a) + c)/x, x)
```

maple [A] time = 1.86, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{arccot}\left(c+(ic+1)\tan\left(bx+a\right)\right)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arccot(c+(1+I*c)*tan(b*x+a))/x,x)
```

```
[Out] int(arccot(c+(1+I*c)*tan(b*x+a))/x,x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(c+(1+I*c)*tan(b*x+a))/x,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(c-1>0)', see `assume?` for more det
ails)Is c-1 zero or nonzero?
```

mupad [A] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{\operatorname{acot}\left(c+\tan\left(a+b\,x\right)\,\left(1+c\,1\mathrm{i}\right)\right)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(acot(c + tan(a + b*x)*(c*1i + 1))/x,x)
```

```
[Out] int(acot(c + tan(a + b*x)*(c*1i + 1))/x, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(acot(c+(1+I*c)*tan(b*x+a))/x,x)
```

```
[Out] Timed out
```

3.166 $\int x^2 \cot^{-1}(c-(1-ic)\tan(a+bx))\,dx$

Optimal. Leaf size=155

$$\frac{\text{Li}_4\left(-ice^{2ia+2ibx}\right)}{8b^3}-\frac{ix\text{Li}_3\left(-ice^{2ia+2ibx}\right)}{4b^2}-\frac{x^2\text{Li}_2\left(-ice^{2ia+2ibx}\right)}{4b}-\frac{1}{6}ix^3\log\left(1+ice^{2ia+2ibx}\right)+\frac{1}{3}x^3\cot^{-1}(c-(1-ic)\tan(a+$$

```
[Out] -1/12*b*x^4+1/3*x^3*arccot(c-(1-I*c)*tan(b*x+a))-1/6*I*x^3*ln(1+I*c*exp(2*I
*a+2*I*b*x))-1/4*x^2*polylog(2,-I*c*exp(2*I*a+2*I*b*x))/b-1/4*I*x*polylog(3
,-I*c*exp(2*I*a+2*I*b*x))/b^2+1/8*polylog(4,-I*c*exp(2*I*a+2*I*b*x))/b^3
```

Rubi [A] time = 0.26, antiderivative size = 155, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 7, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.318, Rules used = {5172, 2184, 2190, 2531, 6609, 2282, 6589}

$$-\frac{ix\text{PolyLog}\left(3,-ice^{2ia+2ibx}\right)}{4b^2}+\frac{\text{PolyLog}\left(4,-ice^{2ia+2ibx}\right)}{8b^3}-\frac{x^2\text{PolyLog}\left(2,-ice^{2ia+2ibx}\right)}{4b}-\frac{1}{6}ix^3\log\left(1+ice^{2ia+2ibx}\right)+\frac{1}{3}$$

Antiderivative was successfully verified.

```
[In] Int[x^2*ArcCot[c - (1 - I*c)*Tan[a + b*x]],x]
```

```
[Out] -(b*x^4)/12 + (x^3*ArcCot[c - (1 - I*c)*Tan[a + b*x]])/3 - (I/6)*x^3*Log[1
+ I*c*E^((2*I)*a + (2*I)*b*x)] - (x^2*PolyLog[2, (-I)*c*E^((2*I)*a + (2*I)*
b*x)])/(4*b) - ((I/4)*x*PolyLog[3, (-I)*c*E^((2*I)*a + (2*I)*b*x)])/b^2 + P
olyLog[4, (-I)*c*E^((2*I)*a + (2*I)*b*x)]/(8*b^3)
```

Rule 2184

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x
_))))^(n_.)), x_Symbol] :> Simp[(c + d*x)^(m + 1)/(a*d*(m + 1)), x] - Dist[
b/a, Int[((c + d*x)^m*(F^(g*(e + f*x)))^n)/(a + b*(F^(g*(e + f*x)))^n), x],
 x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] && !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] && !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 5172

```
Int[ArcCot[(c_.) + (d_.)*Tan[(a_.) + (b_.)*(x_)]]*((e_.) + (f_.)*(x_))^(m_.
), x_Symbol] :> Simp[((e + f*x)^(m + 1)*ArcCot[c + d*Tan[a + b*x]])/(f*(m +
 1)), x] + Dist[(I*b)/(f*(m + 1)), Int[(e + f*x)^(m + 1)/(c + I*d + c*E^(2*
I*a + 2*I*b*x)), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && Eq
Q[(c + I*d)^2, -1]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6609

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[((e + f*x)^m*PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p])/(b*c*p*Log[F]), x] - Dist[(f*m)/(b*c*p*Log[F]), Int[(e + f*x)^
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
 d, e, f, n, p}, x] && GtQ[m, 0]
```

Rubi steps

$$\int x^2 \cot^{-1}(c-(1-ic)\tan(a+bx))\,dx = \frac{1}{3}x^3\cot^{-1}(c-(1-ic)\tan(a+bx)) + \frac{1}{3}(ib)\int \frac{x^3}{i(-1+ic)+c+ce^{2ia+2i\cdots}}$$
$$= -\frac{bx^4}{12} + \frac{1}{3}x^3\cot^{-1}(c-(1-ic)\tan(a+bx)) + \frac{1}{3}(bc)\int \frac{e^{2ia+2ib\cdots}}{i(-1+ic)+c\cdots}$$
$$= -\frac{bx^4}{12} + \frac{1}{3}x^3\cot^{-1}(c-(1-ic)\tan(a+bx)) - \frac{1}{6}ix^3\log\left(1+ice^{2ia+2ibx}\cdots\right.$$
$$= -\frac{bx^4}{12} + \frac{1}{3}x^3\cot^{-1}(c-(1-ic)\tan(a+bx)) - \frac{1}{6}ix^3\log\left(1+ice^{2ia+2ibx}\cdots\right.$$
$$= -\frac{bx^4}{12} + \frac{1}{3}x^3\cot^{-1}(c-(1-ic)\tan(a+bx)) - \frac{1}{6}ix^3\log\left(1+ice^{2ia+2ibx}\cdots\right.$$
$$= -\frac{bx^4}{12} + \frac{1}{3}x^3\cot^{-1}(c-(1-ic)\tan(a+bx)) - \frac{1}{6}ix^3\log\left(1+ice^{2ia+2ibx}\cdots\right.$$
$$= -\frac{bx^4}{12} + \frac{1}{3}x^3\cot^{-1}(c-(1-ic)\tan(a+bx)) - \frac{1}{6}ix^3\log\left(1+ice^{2ia+2ibx}\cdots\right.$$

Mathematica [A] time = 0.26, size = 141, normalized size = 0.91

$$\frac{1}{3}x^3\cot^{-1}(c+i(c+i)\tan(a+bx)) - \frac{4ib^3x^3\log\left(1-\frac{ie^{-2i(a+bx)}}{c}\right) - 6b^2x^2\text{Li}_2\left(\frac{ie^{-2i(a+bx)}}{c}\right) + 6ibx\text{Li}_3\left(\frac{ie^{-2i(a+bx)}}{c}\right) + 3\text{Li}_4\left(\cdots\right)}{24b^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*ArcCot[c - (1 - I*c)*Tan[a + b*x]],x]
```

```
[Out] (x^3*ArcCot[c + I*(I + c)*Tan[a + b*x]])/3 - ((4*I)*b^3*x^3*Log[1 - I/(c*E^
((2*I)*(a + b*x)))] - 6*b^2*x^2*PolyLog[2, I/(c*E^((2*I)*(a + b*x)))] + (6*
I)*b*x*PolyLog[3, I/(c*E^((2*I)*(a + b*x)))] + 3*PolyLog[4, I/(c*E^((2*I)*(
a + b*x)))])/(24*b^3)
```

fricas [C] time = 0.72, size = 321, normalized size = 2.07

$$-\frac{b^4x^4 + 2i\,b^3x^3\log\left(\frac{(c+i)e^{(2i\,bx+2i\,a)}}{ce^{(2i\,bx+2i\,a)}-i}\right) + 6\,b^2x^2\mathrm{Li}_2\left(\frac{1}{2}\,\sqrt{-4i\,c}\,e^{(i\,bx+i\,a)}\right) + 6\,b^2x^2\mathrm{Li}_2\left(-\frac{1}{2}\,\sqrt{-4i\,c}\,e^{(i\,bx+i\,a)}\right) - a^4 - 2i\,a^3\log\cdots}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*arccot(c-(1-I*c)*tan(b*x+a)),x, algorithm="fricas")
```

```
[Out] -1/12*(b^4*x^4 + 2*I*b^3*x^3*log((c + I)*e^(2*I*b*x + 2*I*a)/(c*e^(2*I*b*x
+ 2*I*a) - I)) + 6*b^2*x^2*dilog(1/2*sqrt(-4*I*c)*e^(I*b*x + I*a)) + 6*b^2*
x^2*dilog(-1/2*sqrt(-4*I*c)*e^(I*b*x + I*a)) - a^4 - 2*I*a^3*log(1/2*(2*c*e
^(I*b*x + I*a) + I*sqrt(-4*I*c))/c) - 2*I*a^3*log(1/2*(2*c*e^(I*b*x + I*a)
- I*sqrt(-4*I*c))/c) + 12*I*b*x*polylog(3, 1/2*sqrt(-4*I*c)*e^(I*b*x + I*a)
) + 12*I*b*x*polylog(3, -1/2*sqrt(-4*I*c)*e^(I*b*x + I*a)) - (-2*I*b^3*x^3
- 2*I*a^3)*log(1/2*sqrt(-4*I*c)*e^(I*b*x + I*a) + 1) - (-2*I*b^3*x^3 - 2*I*
a^3)*log(-1/2*sqrt(-4*I*c)*e^(I*b*x + I*a) + 1) - 12*polylog(4, 1/2*sqrt(-4
*I*c)*e^(I*b*x + I*a)) - 12*polylog(4, -1/2*sqrt(-4*I*c)*e^(I*b*x + I*a)))/
b^3
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^2 \operatorname{arccot}\left(-(-i\,c+1)\tan\left(bx+a\right)+c\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*arccot(c-(1-I*c)*tan(b*x+a)),x, algorithm="giac")
```

```
[Out] integrate(x^2*arccot(-(-I*c + 1)*tan(b*x + a) + c), x)
```

maple [C] time = 6.51, size = 1527, normalized size = 9.85

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*arccot(c-(1-I*c)*tan(b*x+a)),x)
```

```
[Out] -1/12*x^3*Pi*csgn(I/(exp(2*I*(b*x+a))+1))*csgn(I*(I+c))*csgn(I/(exp(2*I*(b*
x+a))+1)*(I+c))-1/12*x^3*Pi*csgn(I*exp(2*I*(b*x+a)))*csgn(I/(exp(2*I*(b*x+a
))+1)*(I+c))*csgn(I*exp(2*I*(b*x+a))*(I+c)/(exp(2*I*(b*x+a))+1))-1/4*x^2*po
lylog(2,-I*exp(2*I*(b*x+a))*c)/b+1/6*I*x^3*ln(exp(2*I*(b*x+a))*c-I)-1/12*x^
3*Pi*csgn(I/(exp(2*I*(b*x+a))+1)*(I+c))^3-1/12*b*x^4-1/2*I/b^2*a^2*ln(1-I*e
xp(I*(b*x+a))*(I*c)^(1/2))*x+1/2*I/b^2*ln(1+I*c*exp(2*I*(b*x+a)))*x*a^2-1/1
2*x^3*Pi*csgn((exp(2*I*(b*x+a))*c-I)/(exp(2*I*(b*x+a))+1))^3-1/12*x^3*Pi*cs
gn(I*exp(2*I*(b*x+a))*(I+c)/(exp(2*I*(b*x+a))+1))*csgn(exp(2*I*(b*x+a))*(I+
c)/(exp(2*I*(b*x+a))+1))-1/12*x^3*Pi*csgn(I*(exp(2*I*(b*x+a))*c-I)/(exp(2*I
*(b*x+a))+1))*csgn((exp(2*I*(b*x+a))*c-I)/(exp(2*I*(b*x+a))+1))^2+1/12*x^3*
Pi*csgn(I*(exp(2*I*(b*x+a))*c-I)/(exp(2*I*(b*x+a))+1))*csgn((exp(2*I*(b*x+a
))*c-I)/(exp(2*I*(b*x+a))+1))-1/6*I*x^3*ln(I+c)-1/3*I*x^3*ln(exp(I*(b*x+a))
)+1/4/b^3*polylog(2,-I*exp(2*I*(b*x+a))*c)*a^2+1/12*x^3*Pi*csgn(I*exp(2*I*(
b*x+a)))*csgn(I*exp(2*I*(b*x+a))*(I+c)/(exp(2*I*(b*x+a))+1))^2+1/12*x^3*Pi*
csgn(I/(exp(2*I*(b*x+a))+1)*(I+c))*csgn(I*exp(2*I*(b*x+a))*(I+c)/(exp(2*I*(
b*x+a))+1))^2+1/12*x^3*Pi*csgn(I*exp(2*I*(b*x+a))*(I+c)/(exp(2*I*(b*x+a))+1
))*csgn(exp(2*I*(b*x+a))*(I+c)/(exp(2*I*(b*x+a))+1))^2+1/12*x^3*Pi*csgn(I/(
exp(2*I*(b*x+a))+1))*csgn(I/(exp(2*I*(b*x+a))+1)*(I+c))^2-1/12*x^3*Pi*csgn(
I*exp(2*I*(b*x+a)))^3+1/12*x^3*Pi*csgn((exp(2*I*(b*x+a))*c-I)/(exp(2*I*(b*x
+a))+1))^2+1/12*x^3*Pi*csgn(exp(2*I*(b*x+a))*(I+c)/(exp(2*I*(b*x+a))+1))^2-
1/12*x^3*Pi*csgn(exp(2*I*(b*x+a))*(I+c)/(exp(2*I*(b*x+a))+1))^3+1/6*x^3*Pi*
csgn(I*exp(I*(b*x+a)))*csgn(I*exp(2*I*(b*x+a)))^2+1/12*x^3*Pi*csgn(I*(exp(2
```

```
*I*(b*x+a))*c-I)/(exp(2*I*(b*x+a))+1))^3-1/6*I*x^3*ln(1+I*c*exp(2*I*(b*x+a)
))-1/2/b^3*a^2*dilog(1+I*exp(I*(b*x+a))*(I*c)^(1/2))-1/2/b^3*a^2*dilog(1-I*
exp(I*(b*x+a))*(I*c)^(1/2))-1/2*I/b^3*a^3*ln(1-I*exp(I*(b*x+a))*(I*c)^(1/2)
)+1/3*I/b^3*ln(1+I*c*exp(2*I*(b*x+a)))*a^3+1/12*x^3*Pi*csgn(I*(I+c))*csgn(I
/(exp(2*I*(b*x+a))+1)*(I+c))^2-1/12*x^3*Pi*csgn(I/(exp(2*I*(b*x+a))+1))*csg
n(I*(exp(2*I*(b*x+a))*c-I)/(exp(2*I*(b*x+a))+1))^2-1/12*x^3*Pi*csgn(I*(exp(
2*I*(b*x+a))*c-I))*csgn(I*(exp(2*I*(b*x+a))*c-I)/(exp(2*I*(b*x+a))+1))^2-1/
2*I/b^2*a^2*ln(1+I*exp(I*(b*x+a))*(I*c)^(1/2))*x-1/12*x^3*Pi*csgn(I*exp(2*I
*(b*x+a))*(I+c)/(exp(2*I*(b*x+a))+1))^3+1/8*polylog(4,-I*exp(2*I*(b*x+a))*c
)/b^3+1/6*I/b^3*a^3*ln(-exp(2*I*(b*x+a))*c+I)-1/2*I/b^3*a^3*ln(1+I*exp(I*(b
*x+a))*(I*c)^(1/2))-1/4*I*x*polylog(3,-I*exp(2*I*(b*x+a))*c)/b^2-1/12*x^3*P
i*csgn(I*exp(I*(b*x+a)))^2*csgn(I*exp(2*I*(b*x+a)))+1/12*x^3*Pi*csgn(I/(exp
(2*I*(b*x+a))+1))*csgn(I*(exp(2*I*(b*x+a))*c-I))*csgn(I*(exp(2*I*(b*x+a))*c
-I)/(exp(2*I*(b*x+a))+1))
```

maxima [B] time = 0.37, size = 312, normalized size = 2.01

$$-\frac{\frac{\left((bx+a)^3-3\,(bx+a)^2a+3\,(bx+a)a^2\right)\operatorname{arccot}((-i\,c+1)\tan(bx+a)-c)}{b^2}+\frac{3\left(-3i\,(bx+a)^4+12i\,(bx+a)^3a-18i\,(bx+a)^2a^2+\left(8i\,(bx+a)^3-18i\,(bx+a)^2a+18i\,(\cdots\right.\right.}{\cdots}}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*arccot(c-(1-I*c)*tan(b*x+a)),x, algorithm="maxima")
```

```
[Out] -1/3*(((b*x + a)^3 - 3*(b*x + a)^2*a + 3*(b*x + a)*a^2)*arccot((-I*c + 1)*t
an(b*x + a) - c)/b^2 + 3*(-3*I*(b*x + a)^4 + 12*I*(b*x + a)^3*a - 18*I*(b*x
 + a)^2*a^2 + (8*I*(b*x + a)^3 - 18*I*(b*x + a)^2*a + 18*I*(b*x + a)*a^2)*a
rctan2(c*cos(2*b*x + 2*a), -c*sin(2*b*x + 2*a) + 1) + (-12*I*(b*x + a)^2 +
18*I*(b*x + a)*a - 9*I*a^2)*dilog(-I*c*e^(2*I*b*x + 2*I*a)) + (4*(b*x + a)^
3 - 9*(b*x + a)^2*a + 9*(b*x + a)*a^2)*log(c^2*cos(2*b*x + 2*a)^2 + c^2*sin
(2*b*x + 2*a)^2 - 2*c*sin(2*b*x + 2*a) + 1) + 3*(4*b*x + a)*polylog(3, -I*c
*e^(2*I*b*x + 2*I*a)) + 6*I*polylog(4, -I*c*e^(2*I*b*x + 2*I*a)))*(I*c - 1)
/(b^2*(12*c + 12*I)))/b
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int x^2\,\mathrm{acot}\left(c+\tan\left(a+b\,x\right)\,\left(-1+c\,1{}\mathrm{i}\right)\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*acot(c + tan(a + b*x)*(c*1i - 1)),x)
```

```
[Out] int(x^2*acot(c + tan(a + b*x)*(c*1i - 1)), x)
```

sympy [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: CoercionFailed

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*acot(c-(1-I*c)*tan(b*x+a)),x)
```

```
[Out] Exception raised: CoercionFailed
```

3.167 $\int x \cot^{-1}(c-(1-ic)\tan(a+bx))\,dx$

Optimal. Leaf size=124

$$-\frac{i\mathrm{Li}_3\left(-ice^{2ia+2ibx}\right)}{8b^2}-\frac{x\mathrm{Li}_2\left(-ice^{2ia+2ibx}\right)}{4b}-\frac{1}{4}ix^2\log\left(1+ice^{2ia+2ibx}\right)+\frac{1}{2}x^2\cot^{-1}(c-(1-ic)\tan(a+bx))-\frac{bx^3}{6}$$

```
[Out] -1/6*b*x^3+1/2*x^2*arccot(c-(1-I*c)*tan(b*x+a))-1/4*I*x^2*ln(1+I*c*exp(2*I*
a+2*I*b*x))-1/4*x*polylog(2,-I*c*exp(2*I*a+2*I*b*x))/b-1/8*I*polylog(3,-I*c
*exp(2*I*a+2*I*b*x))/b^2
```

Rubi [A] time = 0.24, antiderivative size = 124, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.300, Rules used = {5172, 2184, 2190, 2531, 2282, 6589}

$$-\frac{i\mathrm{PolyLog}\left(3,-ice^{2ia+2ibx}\right)}{8b^2}-\frac{x\mathrm{PolyLog}\left(2,-ice^{2ia+2ibx}\right)}{4b}-\frac{1}{4}ix^2\log\left(1+ice^{2ia+2ibx}\right)+\frac{1}{2}x^2\cot^{-1}(c-(1-ic)\tan(a+bx)$$

Antiderivative was successfully verified.

```
[In] Int[x*ArcCot[c - (1 - I*c)*Tan[a + b*x]],x]
```

```
[Out] -(b*x^3)/6 + (x^2*ArcCot[c - (1 - I*c)*Tan[a + b*x]])/2 - (I/4)*x^2*Log[1 +
 I*c*E^((2*I)*a + (2*I)*b*x)] - (x*PolyLog[2, (-I)*c*E^((2*I)*a + (2*I)*b*x
)])/(4*b) - ((I/8)*PolyLog[3, (-I)*c*E^((2*I)*a + (2*I)*b*x)])/b^2
```

Rule 2184

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x
_))))^(n_.)), x_Symbol] :> Simp[(c + d*x)^(m + 1)/(a*d*(m + 1)), x] - Dist[
b/a, Int[((c + d*x)^m*(F^(g*(e + f*x)))^n)/(a + b*(F^(g*(e + f*x)))^n), x],
 x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 5172

```
Int[ArcCot[(c_.) + (d_.)*Tan[(a_.) + (b_.)*(x_)]]*((e_.) + (f_.)*(x_))^(m_.
), x_Symbol] :> Simp[((e + f*x)^(m + 1)*ArcCot[c + d*Tan[a + b*x]])/(f*(m +
```

```
1)), x] + Dist[(I*b)/(f*(m + 1)), Int[(e + f*x)^(m + 1)/(c + I*d + c*E^(2*
I*a + 2*I*b*x)), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && Eq
Q[(c + I*d)^2, -1]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int x\cot^{-1}(c-(1-ic)\tan(a+bx))\,dx = \frac{1}{2}x^2\cot^{-1}(c-(1-ic)\tan(a+bx))+\frac{1}{2}(ib)\int \frac{x^2}{i(-1+ic)+c+ce^{2ia+2ib}$$
$$= -\frac{bx^3}{6}+\frac{1}{2}x^2\cot^{-1}(c-(1-ic)\tan(a+bx))+\frac{1}{2}(bc)\int \frac{e^{2ia+2ibx}}{i(-1+ic)+c+$$
$$= -\frac{bx^3}{6}+\frac{1}{2}x^2\cot^{-1}(c-(1-ic)\tan(a+bx))-\frac{1}{4}ix^2\log\left(1+ice^{2ia+2ibx}\right)$$
$$= -\frac{bx^3}{6}+\frac{1}{2}x^2\cot^{-1}(c-(1-ic)\tan(a+bx))-\frac{1}{4}ix^2\log\left(1+ice^{2ia+2ibx}\right)$$
$$= -\frac{bx^3}{6}+\frac{1}{2}x^2\cot^{-1}(c-(1-ic)\tan(a+bx))-\frac{1}{4}ix^2\log\left(1+ice^{2ia+2ibx}\right)$$
$$= -\frac{bx^3}{6}+\frac{1}{2}x^2\cot^{-1}(c-(1-ic)\tan(a+bx))-\frac{1}{4}ix^2\log\left(1+ice^{2ia+2ibx}\right)$$

Mathematica [A] time = 0.10, size = 111, normalized size = 0.90

$$\frac{1}{2}x^2\cot^{-1}(c+i(c+i)\tan(a+bx))-\frac{i\left(2b^2x^2\log\left(1-\frac{ie^{-2i(a+bx)}}{c}\right)+2ibx\text{Li}_2\left(\frac{ie^{-2i(a+bx)}}{c}\right)+\text{Li}_3\left(\frac{ie^{-2i(a+bx)}}{c}\right)\right)}{8b^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[x*ArcCot[c - (1 - I*c)*Tan[a + b*x]],x]
```

```
[Out] (x^2*ArcCot[c + I*(I + c)*Tan[a + b*x]])/2 - ((I/8)*(2*b^2*x^2*Log[1 - I/(c
*E^((2*I)*(a + b*x)))] + (2*I)*b*x*PolyLog[2, I/(c*E^((2*I)*(a + b*x)))] +
PolyLog[3, I/(c*E^((2*I)*(a + b*x)))]))/b^2
```

fricas [C] time = 0.62, size = 270, normalized size = 2.18

$$-\frac{2\,b^3x^3+3i\,b^2x^2\log\left(\frac{(c+i)e^{(2i\,bx+2i\,a)}}{ce^{(2i\,bx+2i\,a)}-i}\right)+2\,a^3+6\,bx\text{Li}_2\left(\frac{1}{2}\sqrt{-4i\,c}\,e^{(i\,bx+i\,a)}\right)+6\,bx\text{Li}_2\left(-\frac{1}{2}\sqrt{-4i\,c}\,e^{(i\,bx+i\,a)}\right)+3i\,a^2}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*arccot(c-(1-I*c)*tan(b*x+a)),x, algorithm="fricas")
```

```
[Out] -1/12*(2*b^3*x^3 + 3*I*b^2*x^2*log((c + I)*e^(2*I*b*x + 2*I*a)/(c*e^(2*I*b*
x + 2*I*a) - I)) + 2*a^3 + 6*b*x*dilog(1/2*sqrt(-4*I*c)*e^(I*b*x + I*a)) +
6*b*x*dilog(-1/2*sqrt(-4*I*c)*e^(I*b*x + I*a)) + 3*I*a^2*log(1/2*(2*c*e^(I*
b*x + I*a) + I*sqrt(-4*I*c))/c) + 3*I*a^2*log(1/2*(2*c*e^(I*b*x + I*a) - I*
sqrt(-4*I*c))/c) - (-3*I*b^2*x^2 + 3*I*a^2)*log(1/2*sqrt(-4*I*c)*e^(I*b*x +
 I*a) + 1) - (-3*I*b^2*x^2 + 3*I*a^2)*log(-1/2*sqrt(-4*I*c)*e^(I*b*x + I*a)
```

```
 + 1) + 6*I*polylog(3, 1/2*sqrt(-4*I*c)*e^(I*b*x + I*a)) + 6*I*polylog(3, -
1/2*sqrt(-4*I*c)*e^(I*b*x + I*a)))/b^2
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x \operatorname{arccot}\left(-(-i c + 1)\tan\left(bx + a\right) + c\right) dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*arccot(c-(1-I*c)*tan(b*x+a)),x, algorithm="giac")
```

```
[Out] integrate(x*arccot(-(-I*c + 1)*tan(b*x + a) + c), x)
```

maple [C] time = 6.08, size = 1492, normalized size = 12.03

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*arccot(c-(1-I*c)*tan(b*x+a)),x)
```

```
[Out] 1/2*I/b*a*ln(1+I*exp(I*(b*x+a))*(I*c)^(1/2))*x+1/2*I/b*a*ln(1-I*exp(I*(b*x+
a))*(I*c)^(1/2))*x+1/8*x^2*Pi*csgn((exp(2*I*(b*x+a))*c-I)/(exp(2*I*(b*x+a))
+1))^2-1/4*I*x^2*ln(I+c)-1/8*x^2*Pi*csgn(I*exp(2*I*(b*x+a)))*csgn(I/(exp(2*
I*(b*x+a))+1)*(I+c))*csgn(I*exp(2*I*(b*x+a))*(I+c)/(exp(2*I*(b*x+a))+1))-1/
8*x^2*Pi*csgn(I/(exp(2*I*(b*x+a))+1))*csgn(I*(exp(2*I*(b*x+a))*c-I)/(exp(2*
I*(b*x+a))+1))^2-1/8*x^2*Pi*csgn(I*(exp(2*I*(b*x+a))*c-I))*csgn(I*(exp(2*I*
(b*x+a))*c-I)/(exp(2*I*(b*x+a))+1))^2+1/8*x^2*Pi*csgn(I*(exp(2*I*(b*x+a))*c
-I)/(exp(2*I*(b*x+a))+1))^3+1/8*x^2*Pi*csgn(I/(exp(2*I*(b*x+a))+1)*(I+c))*c
sgn(I*exp(2*I*(b*x+a))*(I+c)/(exp(2*I*(b*x+a))+1))^2+1/8*x^2*Pi*csgn(I/(exp
(2*I*(b*x+a))+1))*csgn(I/(exp(2*I*(b*x+a))+1)*(I+c))^2-1/8*I*polylog(3,-I*e
xp(2*I*(b*x+a))*c)/b^2-1/2*I*x^2*ln(exp(I*(b*x+a)))+1/8*x^2*Pi*csgn(I*(I+c)
)*csgn(I/(exp(2*I*(b*x+a))+1)*(I+c))^2-1/8*x^2*Pi*csgn(I/(exp(2*I*(b*x+a))+
1))*csgn(I*(I+c))*csgn(I/(exp(2*I*(b*x+a))+1)*(I+c))-1/8*x^2*Pi*csgn(I/(exp
(2*I*(b*x+a))+1)*(I+c))^3-1/8*x^2*Pi*csgn(I*exp(I*(b*x+a)))^2*csgn(I*exp(2*
I*(b*x+a)))+1/4*x^2*Pi*csgn(I*exp(I*(b*x+a)))*csgn(I*exp(2*I*(b*x+a)))^2+1/
4*I*x^2*ln(exp(2*I*(b*x+a))*c-I)-1/8*x^2*Pi*csgn((exp(2*I*(b*x+a))*c-I)/(ex
p(2*I*(b*x+a))+1))^3-1/4*I*x^2*ln(1+I*c*exp(2*I*(b*x+a)))-1/8*x^2*Pi*csgn(I
*exp(2*I*(b*x+a)))^3+1/8*x^2*Pi*csgn(I*exp(2*I*(b*x+a))*(I+c)/(exp(2*I*(b*x
+a))+1))*csgn(exp(2*I*(b*x+a))*(I+c)/(exp(2*I*(b*x+a))+1))^2+1/8*x^2*Pi*csg
n(I*exp(2*I*(b*x+a)))*csgn(I*exp(2*I*(b*x+a))*(I+c)/(exp(2*I*(b*x+a))+1))^2
-1/2*I/b*ln(1+I*c*exp(2*I*(b*x+a)))*x*a+1/2*I/b^2*a^2*ln(1+I*exp(I*(b*x+a))
*(I*c)^(1/2))+1/8*x^2*Pi*csgn(exp(2*I*(b*x+a))*(I+c)/(exp(2*I*(b*x+a))+1))^
2-1/8*x^2*Pi*csgn(exp(2*I*(b*x+a))*(I+c)/(exp(2*I*(b*x+a))+1))^3-1/6*b*x^3-
1/4*x*polylog(2,-I*exp(2*I*(b*x+a))*c)/b+1/2/b^2*a*dilog(1+I*exp(I*(b*x+a))
*(I*c)^(1/2))+1/2/b^2*a*dilog(1-I*exp(I*(b*x+a))*(I*c)^(1/2))+1/8*x^2*Pi*cs
gn(I*(exp(2*I*(b*x+a))*c-I)/(exp(2*I*(b*x+a))+1))*csgn((exp(2*I*(b*x+a))*c-
I)/(exp(2*I*(b*x+a))+1))-1/8*x^2*Pi*csgn(I*exp(2*I*(b*x+a))*(I+c)/(exp(2*I*
(b*x+a))+1))*csgn(exp(2*I*(b*x+a))*(I+c)/(exp(2*I*(b*x+a))+1))-1/4/b^2*poly
log(2,-I*exp(2*I*(b*x+a))*c)*a+1/8*x^2*Pi*csgn(I/(exp(2*I*(b*x+a))+1))*csgn
(I*(exp(2*I*(b*x+a))*c-I))*csgn(I*(exp(2*I*(b*x+a))*c-I)/(exp(2*I*(b*x+a))+
1))-1/8*x^2*Pi*csgn(I*(exp(2*I*(b*x+a))*c-I)/(exp(2*I*(b*x+a))+1))*csgn((ex
p(2*I*(b*x+a))*c-I)/(exp(2*I*(b*x+a))+1))^2-1/4*I/b^2*ln(1+I*c*exp(2*I*(b*x
+a)))*a^2-1/4*I/b^2*a^2*ln(-exp(2*I*(b*x+a))*c+I)+1/2*I/b^2*a^2*ln(1-I*exp(
I*(b*x+a))*(I*c)^(1/2))-1/8*x^2*Pi*csgn(I*exp(2*I*(b*x+a))*(I+c)/(exp(2*I*(
b*x+a))+1))^3
```

maxima [B] time = 0.37, size = 221, normalized size = 1.78

$$-\frac{\frac{\left((bx+a)^2-2\,(bx+a)a\right)\operatorname{arccot}((-i\,c+1)\tan(bx+a)-c)}{b}+\frac{2\left(-4i\,(bx+a)^3+12i\,(bx+a)^2a-6i\,bx\operatorname{Li}_2\left(-i\,ce^{(2i\,bx+2i\,a)}\right)+\left(6i\,(bx+a)^2-12i\,(bx+a)a\right)\arctan(c\cos(}{}}{2\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*arccot(c-(1-I*c)*tan(b*x+a)),x, algorithm="maxima")
```

```
[Out] -1/2*(((b*x + a)^2 - 2*(b*x + a)*a)*arccot((-I*c + 1)*tan(b*x + a) - c)/b +
 2*(-4*I*(b*x + a)^3 + 12*I*(b*x + a)^2*a - 6*I*b*x*dilog(-I*c*e^(2*I*b*x +
 2*I*a)) + (6*I*(b*x + a)^2 - 12*I*(b*x + a)*a)*arctan2(c*cos(2*b*x + 2*a),
 -c*sin(2*b*x + 2*a) + 1) + 3*((b*x + a)^2 - 2*(b*x + a)*a)*log(c^2*cos(2*b
*x + 2*a)^2 + c^2*sin(2*b*x + 2*a)^2 - 2*c*sin(2*b*x + 2*a) + 1) + 3*polylo
g(3, -I*c*e^(2*I*b*x + 2*I*a)))*(I*c - 1)/(b*(12*c + 12*I)))/b
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int x\,\mathrm{acot}\left(c+\tan\left(a+b\,x\right)\,\left(-1+c\,1\mathrm{i}\right)\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*acot(c + tan(a + b*x)*(c*1i - 1)),x)
```

```
[Out] int(x*acot(c + tan(a + b*x)*(c*1i - 1)), x)
```

sympy [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: CoercionFailed

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*acot(c-(1-I*c)*tan(b*x+a)),x)
```

```
[Out] Exception raised: CoercionFailed
```

3.168 $\int \cot^{-1}(c-(1-ic)\tan(a+bx))\,dx$

Optimal. Leaf size=86

$$-\frac{\text{Li}_2\left(-ice^{2ia+2ibx}\right)}{4b}-\frac{1}{2}ix\log\left(1+ice^{2ia+2ibx}\right)+x\cot^{-1}(c-(1-ic)\tan(a+bx))-\frac{bx^2}{2}$$

```
[Out] -1/2*b*x^2+x*arccot(c-(1-I*c)*tan(b*x+a))-1/2*I*x*ln(1+I*c*exp(2*I*a+2*I*b*
x))-1/4*polylog(2,-I*c*exp(2*I*a+2*I*b*x))/b
```

Rubi [A] time = 0.14, antiderivative size = 86, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.278, Rules used = {5164, 2184, 2190, 2279, 2391}

$$-\frac{\text{PolyLog}\left(2,-ice^{2ia+2ibx}\right)}{4b}-\frac{1}{2}ix\log\left(1+ice^{2ia+2ibx}\right)+x\cot^{-1}(c-(1-ic)\tan(a+bx))-\frac{bx^2}{2}$$

Antiderivative was successfully verified.

```
[In] Int[ArcCot[c - (1 - I*c)*Tan[a + b*x]],x]
```

```
[Out] -(b*x^2)/2 + x*ArcCot[c - (1 - I*c)*Tan[a + b*x]] - (I/2)*x*Log[1 + I*c*E^(
(2*I)*a + (2*I)*b*x)] - PolyLog[2, (-I)*c*E^((2*I)*a + (2*I)*b*x)]/(4*b)
```

Rule 2184

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x
_))))^(n_.)), x_Symbol] :> Simp[(c + d*x)^(m + 1)/(a*d*(m + 1)), x] - Dist[
b/a, Int[((c + d*x)^m*(F^(g*(e + f*x)))^n)/(a + b*(F^(g*(e + f*x)))^n), x],
 x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 5164

```
Int[ArcCot[(c_.) + (d_.)*Tan[(a_.) + (b_.)*(x_)]], x_Symbol] :> Simp[x*ArcC
ot[c + d*Tan[a + b*x]], x] + Dist[I*b, Int[x/(c + I*d + c*E^(2*I*a + 2*I*b*
x)), x], x] /; FreeQ[{a, b, c, d}, x] && EqQ[(c + I*d)^2, -1]
```

Rubi steps

$$\int \cot^{-1}(c-(1-ic)\tan(a+bx))\,dx = x\cot^{-1}(c-(1-ic)\tan(a+bx)) + (ib)\int \frac{x}{i(-1+ic)+c+ce^{2ia+2ibx}}\,dx$$
$$= -\frac{bx^2}{2} + x\cot^{-1}(c-(1-ic)\tan(a+bx)) + (bc)\int \frac{e^{2ia+2ibx}x}{i(-1+ic)+c+ce^{2ia+}$$
$$= -\frac{bx^2}{2} + x\cot^{-1}(c-(1-ic)\tan(a+bx)) - \frac{1}{2}ix\log\left(1+ice^{2ia+2ibx}\right) + \frac{1}{2}i$$

Su

$$= -\frac{bx^2}{2} + x\cot^{-1}(c-(1-ic)\tan(a+bx)) - \frac{1}{2}ix\log\left(1+ice^{2ia+2ibx}\right) + $$
$$= -\frac{bx^2}{2} + x\cot^{-1}(c-(1-ic)\tan(a+bx)) - \frac{1}{2}ix\log\left(1+ice^{2ia+2ibx}\right) - \frac{\mathrm{Li}_2}{}$$

Mathematica [B] time = 2.98, size = 847, normalized size = 9.85

$$x\cot^{-1}(c+i(c+i)\tan(a+bx)) - \frac{ix\left(-2ibx\log(2\cos(bx)(\cos(bx)\right.}{((c-i)\cos(a+bx)+i(c+i)\sin(a+bx))\left(-\frac{\log\left(\frac{1}{2}\sec(bx)(\cos(a)+i\sin(a))((ic+1)\cos(a+bx)\right.}{\tan(bx)-i}\right.}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[ArcCot[c - (1 - I*c)*Tan[a + b*x]],x]
```

```
[Out] x*ArcCot[c + I*(I + c)*Tan[a + b*x]] - (I*x*((-2*I)*b*x*Log[2*Cos[b*x]*(Cos
[b*x] - I*Sin[b*x])] + Log[(Sec[b*x]*(Cos[a] - I*Sin[a])*((-I + c)*Cos[a +
b*x] + I*(I + c)*Sin[a + b*x]))/(2*c)]*Log[1 - I*Tan[b*x]] - Log[(Sec[b*x]*
(Cos[a] + I*Sin[a])*((1 + I*c)*Cos[a + b*x] - (I + c)*Sin[a + b*x]))/2]*Log
[1 + I*Tan[b*x]] + PolyLog[2, -Cos[2*b*x] + I*Sin[2*b*x]] + PolyLog[2, (Sec
[b*x]*((I + c)*Cos[a] + (1 + I*c)*Sin[a])*(Cos[a + b*x] - I*Sin[a + b*x]))/
(2*c)] - PolyLog[2, ((Cos[a] + I*Sin[a])*((I + c)*Cos[a] + (1 + I*c)*Sin[a]
)*(-I + Tan[b*x]))/2])*Sec[a + b*x]*(Cos[b*x] + I*Sin[b*x])*(I*Cos[b*x] + S
in[b*x]))/(((-I + c)*Cos[a + b*x] + I*(I + c)*Sin[a + b*x])*(-2*b*x + I*Log
[1 - (Sec[b*x]*((I + c)*Cos[a] + (1 + I*c)*Sin[a])*(Cos[a + b*x] - I*Sin[a
+ b*x]))/(2*c)] + (I*(I + c)*Cos[a + b*x]*(Log[1 - I*Tan[b*x]] - Log[1 + I*
Tan[b*x]]))/((-I + c)*Cos[a + b*x] + I*(I + c)*Sin[a + b*x]) + ((1 + I*c)*(
Log[1 - I*Tan[b*x]] - Log[1 + I*Tan[b*x]])*Sin[a + b*x])/((-1 - I*c)*Cos[a
+ b*x] + (I + c)*Sin[a + b*x]) + (2*I)*b*x*Tan[b*x] - Log[1 - (Sec[b*x]*((I
 + c)*Cos[a] + (1 + I*c)*Sin[a])*(Cos[a + b*x] - I*Sin[a + b*x]))/(2*c)]*Ta
n[b*x] + Log[1 - I*Tan[b*x]]*Tan[b*x] - Log[1 + I*Tan[b*x]]*Tan[b*x] - (Log
[(Sec[b*x]*(Cos[a] + I*Sin[a])*((1 + I*c)*Cos[a + b*x] - (I + c)*Sin[a + b*
x]))/2]*Sec[b*x]^2)/(-I + Tan[b*x]) + (Log[1 - ((Cos[a] + I*Sin[a])*((I + c
)*Cos[a] + (1 + I*c)*Sin[a])*(-I + Tan[b*x]))/2]*Sec[b*x]^2)/(-I + Tan[b*x]
) + (Log[(Sec[b*x]*(Cos[a] - I*Sin[a])*((-I + c)*Cos[a + b*x] + I*(I + c)*S
in[a + b*x]))/(2*c)]*Sec[b*x]^2)/(I + Tan[b*x]))*(-I + Tan[a + b*x]))
```

fricas [B] time = 0.58, size = 201, normalized size = 2.34

$$-\frac{b^2x^2 + i\,bx\log\left(\frac{(c+i)e^{(2i\,bx+2i\,a)}}{ce^{(2i\,bx+2i\,a)}-i}\right) - a^2 - (-i\,bx-i\,a)\log\left(\frac{1}{2}\sqrt{-4i\,c}\,e^{(i\,bx+i\,a)}+1\right) - (-i\,bx-i\,a)\log\left(-\frac{1}{2}\sqrt{-4i\,c}\,e^{(i}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(c-(1-I*c)*tan(b*x+a)),x, algorithm="fricas")
```

```
[Out] -1/2*(b^2*x^2 + I*b*x*log((c + I)*e^(2*I*b*x + 2*I*a)/(c*e^(2*I*b*x + 2*I*a
) - I)) - a^2 - (-I*b*x - I*a)*log(1/2*sqrt(-4*I*c)*e^(I*b*x + I*a) + 1) -
```

```
(-I*b*x - I*a)*log(-1/2*sqrt(-4*I*c)*e^(I*b*x + I*a) + 1) - I*a*log(1/2*(2*
c*e^(I*b*x + I*a) + I*sqrt(-4*I*c))/c) - I*a*log(1/2*(2*c*e^(I*b*x + I*a) -
 I*sqrt(-4*I*c))/c) + dilog(1/2*sqrt(-4*I*c)*e^(I*b*x + I*a)) + dilog(-1/2*
sqrt(-4*I*c)*e^(I*b*x + I*a)))/b
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \operatorname{arccot}\left(-(-i c+1) \tan(bx+a)+c\right) dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(c-(1-I*c)*tan(b*x+a)),x, algorithm="giac")
```

```
[Out] integrate(arccot(-(-I*c + 1)*tan(b*x + a) + c), x)
```

maple [B] time = 0.61, size = 1681, normalized size = 19.55

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arccot(c-(1-I*c)*tan(b*x+a)),x)
```

```
[Out] 1/4*I/b/(-1+I*c)/(I+c)*ln(-(-1+I*c)*tan(b*x+a)+c+I)*ln((-(-1+I*c)*tan(b*x+a
)-c-I)/(-2*I-2*c))-1/b/(-1+I*c)*arccot(c+(-1+I*c)*tan(b*x+a))/(2*I+2*c)*ln(
I+(-1+I*c)*tan(b*x+a)+c)+1/b/(-1+I*c)*arccot(c+(-1+I*c)*tan(b*x+a))/(2*I+2*
c)*ln(-(-1+I*c)*tan(b*x+a)+c+I)-1/2/b/(-1+I*c)/(I+c)*dilog(-1/2*I*(I+(-1+I*
c)*tan(b*x+a)+c))*c-1/4/b/(-1+I*c)/(I+c)*ln(I+(-1+I*c)*tan(b*x+a)+c)^2*c+1/
2/b/(-1+I*c)/(I+c)*dilog((-(-1+I*c)*tan(b*x+a)-c-I)/(-2*I-2*c))*c-1/4*I/b/(
-1+I*c)/(I+c)*dilog(-1/2*(-(-1+I*c)*tan(b*x+a)-c+I)/c)-1/8*I/b/(-1+I*c)/(I+
c)*ln(I+(-1+I*c)*tan(b*x+a)+c)^2+1/4*I/b/(-1+I*c)/(I+c)*dilog((-(-1+I*c)*ta
n(b*x+a)-c-I)/(-2*I-2*c))-1/4*I/b/(-1+I*c)/(I+c)*dilog(-1/2*I*(I+(-1+I*c)*t
an(b*x+a)+c))+1/8*I/b/(-1+I*c)/(I+c)*ln(I+(-1+I*c)*tan(b*x+a)+c)^2*c^2+1/4*
I/b/(-1+I*c)/(I+c)*dilog(-1/2*(-(-1+I*c)*tan(b*x+a)-c+I)/c)*c^2-1/2/b/(-1+I
*c)/(I+c)*ln(-(-1+I*c)*tan(b*x+a)+c+I)*ln(-1/2*(-(-1+I*c)*tan(b*x+a)-c+I)/c
)*c+1/2/b/(-1+I*c)/(I+c)*ln(I+(-1+I*c)*tan(b*x+a)+c)*ln(-1/2*I*(-(-1+I*c)*t
an(b*x+a)-c+I))*c-1/4*I/b/(-1+I*c)/(I+c)*ln(-(-1+I*c)*tan(b*x+a)+c+I)*ln(-1
/2*(-(-1+I*c)*tan(b*x+a)-c+I)/c)+1/4*I/b/(-1+I*c)/(I+c)*ln(I+(-1+I*c)*tan(b
*x+a)+c)*ln(-1/2*I*(-(-1+I*c)*tan(b*x+a)-c+I))-1/4*I/b/(-1+I*c)/(I+c)*ln(-1
/2*I*(I+(-1+I*c)*tan(b*x+a)+c))*ln(-1/2*I*(-(-1+I*c)*tan(b*x+a)-c+I))-1/4*I
/b/(-1+I*c)/(I+c)*dilog((-(-1+I*c)*tan(b*x+a)-c-I)/(-2*I-2*c))*c^2+1/2/b/(-
1+I*c)/(I+c)*ln(-(-1+I*c)*tan(b*x+a)+c+I)*ln((-(-1+I*c)*tan(b*x+a)-c-I)/(-2
*I-2*c))*c+1/4*I/b/(-1+I*c)/(I+c)*dilog(-1/2*I*(I+(-1+I*c)*tan(b*x+a)+c))*c
^2+1/4*I/b/(-1+I*c)/(I+c)*ln(-1/2*I*(I+(-1+I*c)*tan(b*x+a)+c))*ln(-1/2*I*(-
(-1+I*c)*tan(b*x+a)-c+I))*c^2-1/4*I/b/(-1+I*c)/(I+c)*ln(-(-1+I*c)*tan(b*x+a
)+c+I)*ln((-(-1+I*c)*tan(b*x+a)-c-I)/(-2*I-2*c))*c^2+1/4*I/b/(-1+I*c)/(I+c)
*ln(-(-1+I*c)*tan(b*x+a)+c+I)*ln(-1/2*(-(-1+I*c)*tan(b*x+a)-c+I)/c)*c^2+2*I
/b/(-1+I*c)*arccot(c+(-1+I*c)*tan(b*x+a))/(2*I+2*c)*ln(I+(-1+I*c)*tan(b*x+a
)+c)*c-2*I/b/(-1+I*c)*arccot(c+(-1+I*c)*tan(b*x+a))/(2*I+2*c)*ln(-(-1+I*c)*
tan(b*x+a)+c+I)*c-1/4*I/b/(-1+I*c)/(I+c)*ln(I+(-1+I*c)*tan(b*x+a)+c)*ln(-1/
2*I*(-(-1+I*c)*tan(b*x+a)-c+I))*c^2-1/2/b/(-1+I*c)/(I+c)*dilog(-1/2*(-(-1+I
*c)*tan(b*x+a)-c+I)/c)*c-1/2/b/(-1+I*c)/(I+c)*ln(-1/2*I*(I+(-1+I*c)*tan(b*x
+a)+c))*ln(-1/2*I*(-(-1+I*c)*tan(b*x+a)-c+I))*c+1/b/(-1+I*c)*arccot(c+(-1+I
*c)*tan(b*x+a))/(2*I+2*c)*ln(I+(-1+I*c)*tan(b*x+a)+c)*c^2-1/b/(-1+I*c)*arcc
ot(c+(-1+I*c)*tan(b*x+a))/(2*I+2*c)*ln(-(-1+I*c)*tan(b*x+a)+c+I)*c^2
```

maxima [B] time = 0.47, size = 450, normalized size = 5.23

$$(ic-1)\left(\frac{4i(bx+a)\log\left(\frac{2ic^2-2(c^2+2ic-1)\tan(bx+a)+2i}{2ic^2-2(c^2+2ic-1)\tan(bx+a)-4c-2i}\right)}{ic-1}+\frac{i\left(4(bx+a)\left(\log\left(-ic^2+(c^2+2ic-1)\tan(bx+a)+2c+i\right)-\log\left(-ic^2+(c^2+2ic-1)\tan(bx+a)-\right.\right.\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(c-(1-I*c)*tan(b*x+a)),x, algorithm="maxima")
```

```
[Out] 1/8*((I*c - 1)*(4*I*(b*x + a)*log((2*I*c^2 - 2*(c^2 + 2*I*c - 1)*tan(b*x +
a) + 2*I)/(2*I*c^2 - 2*(c^2 + 2*I*c - 1)*tan(b*x + a) - 4*c - 2*I))/(I*c -
1) + I*(4*(b*x + a)*(log(-I*c^2 + (c^2 + 2*I*c - 1)*tan(b*x + a) + 2*c + I)
 - log(-I*c^2 + (c^2 + 2*I*c - 1)*tan(b*x + a) - I)) + I*log(-I*c^2 + (c^2
+ 2*I*c - 1)*tan(b*x + a) + 2*c + I)^2 - 2*I*log(-I*c^2 + (c^2 + 2*I*c - 1)
*tan(b*x + a) - I)*log(1/2*(c + I)*tan(b*x + a) - 1/2*I*c + 1/2) + 2*I*log(
-I*c^2 + (c^2 + 2*I*c - 1)*tan(b*x + a) - I)*log(-1/2*((I*c - 1)*tan(b*x +
a) + c - I)/c + 1) - 2*I*log(-I*c^2 + (c^2 + 2*I*c - 1)*tan(b*x + a) + 2*c
+ I)*log(-1/2*I*tan(b*x + a) + 1/2) - 2*I*dilog(-1/2*(c + I)*tan(b*x + a) +
 1/2*I*c + 1/2) + 2*I*dilog(1/2*((I*c - 1)*tan(b*x + a) + c - I)/c) - 2*I*d
ilog(1/2*I*tan(b*x + a) + 1/2))/(I*c - 1)) - 8*(b*x + a)*arccot((-I*c + 1)*
tan(b*x + a) - c) + 4*(-I*b*x - I*a)*log((2*I*c^2 - 2*(c^2 + 2*I*c - 1)*tan
(b*x + a) + 2*I)/(2*I*c^2 - 2*(c^2 + 2*I*c - 1)*tan(b*x + a) - 4*c - 2*I)))
/b
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \mathrm{acot}\left(c+\tan\left(a+b\,x\right)\,\left(-1+c\,1\mathrm{i}\right)\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(acot(c + tan(a + b*x)*(c*1i - 1)),x)
```

```
[Out] int(acot(c + tan(a + b*x)*(c*1i - 1)), x)
```

sympy [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: CoercionFailed

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(acot(c-(1-I*c)*tan(b*x+a)),x)
```

```
[Out] Exception raised: CoercionFailed
```

3.169 $\int \frac{\cot^{-1}(c-(1-ic)\tan(a+bx))}{x}\,dx$

Optimal. Leaf size=25

$$\mathrm{Int}\left(\frac{\cot^{-1}(c-(1-ic)\tan(a+bx))}{x},x\right)$$

```
[Out] CannotIntegrate(arccot(c-(1-I*c)*tan(b*x+a))/x,x)
```

Rubi [A] time = 0.16, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\cot^{-1}(c-(1-ic)\tan(a+bx))}{x}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[ArcCot[c - (1 - I*c)*Tan[a + b*x]]/x,x]
[Out] Defer[Int][ArcCot[c - (1 - I*c)*Tan[a + b*x]]/x, x]
```

Rubi steps

$$\int \frac{\cot^{-1}(c-(1-ic)\tan(a+bx))}{x}\,dx=\int \frac{\cot^{-1}(c-(1-ic)\tan(a+bx))}{x}\,dx$$

Mathematica [A] time = 0.84, size = 0, normalized size = 0.00

$$\int \frac{\cot^{-1}(c-(1-ic)\tan(a+bx))}{x}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[ArcCot[c - (1 - I*c)*Tan[a + b*x]]/x,x]
[Out] Integrate[ArcCot[c - (1 - I*c)*Tan[a + b*x]]/x, x]
```

fricas [A] time = 0.58, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(-\frac{i\log\left(\frac{(c+i)e^{(2i\,bx+2i\,a)}}{ce^{(2i\,bx+2i\,a)}-i}\right)}{2x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(c-(1-I*c)*tan(b*x+a))/x,x, algorithm="fricas")
[Out] integral(-1/2*I*log((c + I)*e^(2*I*b*x + 2*I*a)/(c*e^(2*I*b*x + 2*I*a) - I)
)/x, x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{arccot}\left(-(-i\,c+1)\tan\left(bx+a\right)+c\right)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(c-(1-I*c)*tan(b*x+a))/x,x, algorithm="giac")
```

```
[Out] integrate(arccot(-(-I*c + 1)*tan(b*x + a) + c)/x, x)
```

maple [A] time = 1.83, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{arccot}\left(c-\left(-ic+1\right)\tan\left(bx+a\right)\right)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arccot(c-(1-I*c)*tan(b*x+a))/x,x)
```

```
[Out] int(arccot(c-(1-I*c)*tan(b*x+a))/x,x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(c-(1-I*c)*tan(b*x+a))/x,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(c-1>0)', see `assume?` for more det
ails)Is c-1 zero or nonzero?
```

mupad [A] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{\operatorname{acot}\left(c+\tan\left(a+b\,x\right)\,\left(-1+c\,1{}\mathrm{i}\right)\right)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(acot(c + tan(a + b*x)*(c*1i - 1))/x,x)
```

```
[Out] int(acot(c + tan(a + b*x)*(c*1i - 1))/x, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(acot(c-(1-I*c)*tan(b*x+a))/x,x)
```

```
[Out] Timed out
```

3.170 $\int \cot^{-1}(\cot(a+bx))\,dx$

Optimal. Leaf size=16

$$\frac{\cot^{-1}(\cot(a+bx))^2}{2b}$$

```
[Out] 1/2*arccot(cot(b*x+a))^2/b
```

Rubi [A] time = 0.01, antiderivative size = 16, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 7, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.286, Rules used = {2157, 30}

$$\frac{\cot^{-1}(\cot(a+bx))^2}{2b}$$

Antiderivative was successfully verified.

```
[In] Int[ArcCot[Cot[a + b*x]],x]
```

```
[Out] ArcCot[Cot[a + b*x]]^2/(2*b)
```

Rule 30

```
Int[(x_)^(m_.), x_Symbol] :> Simp[x^(m + 1)/(m + 1), x] /; FreeQ[m, x] && N
eQ[m, -1]
```

Rule 2157

```
Int[(u_)^(m_.), x_Symbol] :> With[{c = Simplify[D[u, x]]}, Dist[1/c, Subst[
Int[x^m, x], x, u], x]] /; FreeQ[m, x] && PiecewiseLinearQ[u, x]
```

Rubi steps

$$\begin{aligned}\int \cot^{-1}(\cot(a+bx))\,dx &= \frac{\text{Subst}\left(\int x\,dx, x, \cot^{-1}(\cot(a+bx))\right)}{b}\\ &= \frac{\cot^{-1}(\cot(a+bx))^2}{2b}\end{aligned}$$

Mathematica [A] time = 0.01, size = 18, normalized size = 1.12

$$x\cot^{-1}(\cot(a+bx))-\frac{bx^2}{2}$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcCot[Cot[a + b*x]],x]
```

```
[Out] -1/2*(b*x^2) + x*ArcCot[Cot[a + b*x]]
```

fricas [A] time = 0.63, size = 10, normalized size = 0.62

$$\frac{1}{2}x^2b+xa$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(cot(b*x+a)),x, algorithm="fricas")
```

```
[Out] 1/2*x^2*b + x*a
```

giac [A] time = 0.12, size = 10, normalized size = 0.62

$$\frac{1}{2}bx^2 + ax$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(cot(b*x+a)),x, algorithm="giac")
```

```
[Out] 1/2*b*x^2 + a*x
```

maple [B] time = 0.05, size = 45, normalized size = 2.81

$$\frac{-\left(\frac{\pi}{2}-\operatorname{arccot}\left(\cot\left(bx+a\right)\right)\right)\operatorname{arccot}\left(\cot\left(bx+a\right)\right)-\frac{\left(\frac{\pi}{2}-\operatorname{arccot}\left(\cot\left(bx+a\right)\right)\right)^2}{2}}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arccot(cot(b*x+a)),x)
```

```
[Out] 1/b*(-(1/2*Pi-arccot(cot(b*x+a)))*arccot(cot(b*x+a))-1/2*(1/2*Pi-arccot(cot
(b*x+a)))^2)
```

maxima [A] time = 0.32, size = 10, normalized size = 0.62

$$\frac{1}{2}bx^2 + ax$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(cot(b*x+a)),x, algorithm="maxima")
```

```
[Out] 1/2*b*x^2 + a*x
```

mupad [B] time = 0.64, size = 16, normalized size = 1.00

$$x\operatorname{acot}\left(\cot\left(a+b\,x\right)\right)-\frac{b\,x^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(acot(cot(a + b*x)),x)
```

```
[Out] x*acot(cot(a + b*x)) - (b*x^2)/2
```

sympy [A] time = 0.12, size = 19, normalized size = 1.19

$$\begin{cases} \frac{\operatorname{acot}^2\left(\cot\left(a+bx\right)\right)}{2b} & \text{for}\ b \neq 0 \\ x\operatorname{acot}\left(\cot\left(a\right)\right) & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(acot(cot(b*x+a)),x)
```

```
[Out] Piecewise((acot(cot(a + b*x))**2/(2*b), Ne(b, 0)), (x*acot(cot(a)), True))
```

3.171 $\int x^2 \cot^{-1}(c + d\cot(a + bx))\, dx$

Optimal. Leaf size=399

$$\frac{\mathrm{Li}_4\left(\frac{(ic-d+1)e^{2ia+2ibx}}{ic+d+1}\right)}{8b^3}-\frac{\mathrm{Li}_4\left(\frac{(c+i(d+1))e^{2ia+2ibx}}{c+i(1-d)}\right)}{8b^3}-\frac{ix\mathrm{Li}_3\left(\frac{(ic-d+1)e^{2ia+2ibx}}{ic+d+1}\right)}{4b^2}+\frac{ix\mathrm{Li}_3\left(\frac{(c+i(d+1))e^{2ia+2ibx}}{c+i(1-d)}\right)}{4b^2}-\frac{x^2\mathrm{Li}_2\left(\frac{(ic-d+1)e^{2ia+2ibx}}{ic+d+1}\right)}{4b}$$

```
[Out] 1/3*x^3*arccot(c+d*cot(b*x+a))-1/6*I*x^3*ln(1-(1+I*c-d)*exp(2*I*a+2*I*b*x)/
(1+I*c+d))+1/6*I*x^3*ln(1-(c+I*(1+d))*exp(2*I*a+2*I*b*x)/(c+I*(1-d)))-1/4*x
^2*polylog(2,(1+I*c-d)*exp(2*I*a+2*I*b*x)/(1+I*c+d))/b+1/4*x^2*polylog(2,(c
+I*(1+d))*exp(2*I*a+2*I*b*x)/(c+I*(1-d)))/b-1/4*I*x*polylog(3,(1+I*c-d)*exp
(2*I*a+2*I*b*x)/(1+I*c+d))/b^2+1/4*I*x*polylog(3,(c+I*(1+d))*exp(2*I*a+2*I*
b*x)/(c+I*(1-d)))/b^2+1/8*polylog(4,(1+I*c-d)*exp(2*I*a+2*I*b*x)/(1+I*c+d))
/b^3-1/8*polylog(4,(c+I*(1+d))*exp(2*I*a+2*I*b*x)/(c+I*(1-d)))/b^3
```

Rubi [A] time = 0.51, antiderivative size = 399, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 6, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}} = 0.400$, Rules used = {5178, 2190, 2531, 6609, 2282, 6589}

$$-\frac{ix\text{PolyLog}\left(3,\frac{(ic-d+1)e^{2ia+2ibx}}{ic+d+1}\right)}{4b^2}+\frac{ix\text{PolyLog}\left(3,\frac{(c+i(d+1))e^{2ia+2ibx}}{c+i(1-d)}\right)}{4b^2}+\frac{\text{PolyLog}\left(4,\frac{(ic-d+1)e^{2ia+2ibx}}{ic+d+1}\right)}{8b^3}-\frac{\text{PolyLog}\left(4,\frac{(c+i(d\ldots}{c\ldots}\right)}{8b^3}$$

Antiderivative was successfully verified.

```
[In] Int[x^2*ArcCot[c + d*Cot[a + b*x]],x]
```

```
[Out] (x^3*ArcCot[c + d*Cot[a + b*x]])/3 - (I/6)*x^3*Log[1 - ((1 + I*c - d)*E^((2
*I)*a + (2*I)*b*x))/(1 + I*c + d)] + (I/6)*x^3*Log[1 - ((c + I*(1 + d))*E^(
(2*I)*a + (2*I)*b*x))/(c + I*(1 - d))] - (x^2*PolyLog[2, ((1 + I*c - d)*E^(
(2*I)*a + (2*I)*b*x))/(1 + I*c + d)])/(4*b) + (x^2*PolyLog[2, ((c + I*(1 +
d))*E^((2*I)*a + (2*I)*b*x))/(c + I*(1 - d))])/(4*b) - ((I/4)*x*PolyLog[3,
((1 + I*c - d)*E^((2*I)*a + (2*I)*b*x))/(1 + I*c + d)])/b^2 + ((I/4)*x*Poly
Log[3, ((c + I*(1 + d))*E^((2*I)*a + (2*I)*b*x))/(c + I*(1 - d))])/b^2 + Po
lyLog[4, ((1 + I*c - d)*E^((2*I)*a + (2*I)*b*x))/(1 + I*c + d)]/(8*b^3) - P
olyLog[4, ((c + I*(1 + d))*E^((2*I)*a + (2*I)*b*x))/(c + I*(1 - d))]/(8*b^3
)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
```

```
, g, n}, x] && GtQ[m, 0]
```

Rule 5178

```
Int[ArcCot[(c_.) + Cot[(a_.) + (b_.)*(x_)]*(d_.)]*((e_.) + (f_.)*(x_))^(m_.
), x_Symbol] :> Simp[((e + f*x)^(m + 1)*ArcCot[c + d*Cot[a + b*x]])/(f*(m +
 1)), x] + (-Dist[(b*(1 + I*c - d))/(f*(m + 1)), Int[((e + f*x)^(m + 1)*E^(
2*I*a + 2*I*b*x))/(1 + I*c + d - (1 + I*c - d)*E^(2*I*a + 2*I*b*x)), x], x]
 + Dist[(b*(1 - I*c + d))/(f*(m + 1)), Int[((e + f*x)^(m + 1)*E^(2*I*a + 2*
I*b*x))/(1 - I*c - d - (1 - I*c + d)*E^(2*I*a + 2*I*b*x)), x], x]) /; FreeQ
[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[(c - I*d)^2, -1]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6609

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[((e + f*x)^m*PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p])/(b*c*p*Log[F]), x] - Dist[(f*m)/(b*c*p*Log[F]), Int[(e + f*x)^
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
 d, e, f, n, p}, x] && GtQ[m, 0]
```

Rubi steps

$$\int x^2 \cot^{-1}(c+d\cot(a+bx))\,dx = \frac{1}{3}x^3\cot^{-1}(c+d\cot(a+bx)) - \frac{1}{3}(b(1+ic-d))\int \frac{e^{2ia+2ibx}x^3}{1+ic+d+(-1-ic+d\ldots}$$

$$= \frac{1}{3}x^3\cot^{-1}(c+d\cot(a+bx)) - \frac{1}{6}ix^3\log\left(1-\frac{(1+ic-d)e^{2ia+2ibx}}{1+ic+d}\right) + \frac{1}{6}ix^3\,\mathrm{lo}\ldots$$

$$= \frac{1}{3}x^3\cot^{-1}(c+d\cot(a+bx)) - \frac{1}{6}ix^3\log\left(1-\frac{(1+ic-d)e^{2ia+2ibx}}{1+ic+d}\right) + \frac{1}{6}ix^3\,\mathrm{lo}\ldots$$

$$= \frac{1}{3}x^3\cot^{-1}(c+d\cot(a+bx)) - \frac{1}{6}ix^3\log\left(1-\frac{(1+ic-d)e^{2ia+2ibx}}{1+ic+d}\right) + \frac{1}{6}ix^3\,\mathrm{lo}\ldots$$

$$= \frac{1}{3}x^3\cot^{-1}(c+d\cot(a+bx)) - \frac{1}{6}ix^3\log\left(1-\frac{(1+ic-d)e^{2ia+2ibx}}{1+ic+d}\right) + \frac{1}{6}ix^3\,\mathrm{lo}\ldots$$

$$= \frac{1}{3}x^3\cot^{-1}(c+d\cot(a+bx)) - \frac{1}{6}ix^3\log\left(1-\frac{(1+ic-d)e^{2ia+2ibx}}{1+ic+d}\right) + \frac{1}{6}ix^3\,\mathrm{lo}\ldots$$

Mathematica [A] time = 0.91, size = 359, normalized size = 0.90

$$\frac{1}{3}x^3\cot^{-1}(d\cot(a+bx)+c)+\frac{-4ib^3x^3\log\left(1-\frac{(c+i(d-1))e^{2i(a+bx)}}{c-i(d+1)}\right)+4ib^3x^3\log\left(1-\frac{(c+i(d+1))e^{2i(a+bx)}}{c-id+i}\right)-6b^2x^2\mathrm{Li}_2\left(\frac{(c+\ldots}{\ldots}\right.}{\ldots}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*ArcCot[c + d*Cot[a + b*x]],x]
```

```
[Out] (x^3*ArcCot[c + d*Cot[a + b*x]])/3 + ((-4*I)*b^3*x^3*Log[1 - ((c + I*(-1 +
d))*E^((2*I)*(a + b*x)))/(c - I*(1 + d))] + (4*I)*b^3*x^3*Log[1 - ((c + I*(
1 + d))*E^((2*I)*(a + b*x)))/(I + c - I*d)] - 6*b^2*x^2*PolyLog[2, ((c + I*
(-1 + d))*E^((2*I)*(a + b*x)))/(c - I*(1 + d))] + 6*b^2*x^2*PolyLog[2, ((c
+ I*(1 + d))*E^((2*I)*(a + b*x)))/(I + c - I*d)] - (6*I)*b*x*PolyLog[3, ((c
 + I*(-1 + d))*E^((2*I)*(a + b*x)))/(c - I*(1 + d))] + (6*I)*b*x*PolyLog[3,
 ((c + I*(1 + d))*E^((2*I)*(a + b*x)))/(I + c - I*d)] + 3*PolyLog[4, ((c +
I*(-1 + d))*E^((2*I)*(a + b*x)))/(c - I*(1 + d))] - 3*PolyLog[4, ((c + I*(1
 + d))*E^((2*I)*(a + b*x)))/(I + c - I*d)])/(24*b^3)
```

fricas [C] time = 0.89, size = 1585, normalized size = 3.97

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*arccot(c+d*cot(b*x+a)),x, algorithm="fricas")
```

```
[Out] 1/48*(16*b^3*x^3*arccot(d*cot(b*x + a) + c) - 6*b^2*x^2*dilog(-(c^2 + d^2 -
 (c^2 + 2*I*c*d - d^2 + 1)*cos(2*b*x + 2*a) + (-I*c^2 + 2*c*d + I*d^2 - I)*
sin(2*b*x + 2*a) + 2*d + 1)/(c^2 + d^2 + 2*d + 1) + 1) - 6*b^2*x^2*dilog(-(
c^2 + d^2 - (c^2 - 2*I*c*d - d^2 + 1)*cos(2*b*x + 2*a) + (I*c^2 + 2*c*d - I
*d^2 + I)*sin(2*b*x + 2*a) + 2*d + 1)/(c^2 + d^2 + 2*d + 1) + 1) + 6*b^2*x^
2*dilog(-(c^2 + d^2 - (c^2 + 2*I*c*d - d^2 + 1)*cos(2*b*x + 2*a) + (-I*c^2
+ 2*c*d + I*d^2 - I)*sin(2*b*x + 2*a) - 2*d + 1)/(c^2 + d^2 - 2*d + 1) + 1)
 + 6*b^2*x^2*dilog(-(c^2 + d^2 - (c^2 - 2*I*c*d - d^2 + 1)*cos(2*b*x + 2*a)
 + (I*c^2 + 2*c*d - I*d^2 + I)*sin(2*b*x + 2*a) - 2*d + 1)/(c^2 + d^2 - 2*d
 + 1) + 1) + 4*I*a^3*log(1/2*c^2 + I*c*d - 1/2*d^2 - 1/2*(c^2 + d^2 + 2*d +
 1)*cos(2*b*x + 2*a) + 1/2*(I*c^2 + I*d^2 + 2*I*d + I)*sin(2*b*x + 2*a) + 1
/2) - 4*I*a^3*log(1/2*c^2 + I*c*d - 1/2*d^2 - 1/2*(c^2 + d^2 - 2*d + 1)*cos
(2*b*x + 2*a) + 1/2*(I*c^2 + I*d^2 - 2*I*d + I)*sin(2*b*x + 2*a) + 1/2) - 4
*I*a^3*log(-1/2*c^2 + I*c*d + 1/2*d^2 + 1/2*(c^2 + d^2 + 2*d + 1)*cos(2*b*x
 + 2*a) + 1/2*(I*c^2 + I*d^2 + 2*I*d + I)*sin(2*b*x + 2*a) - 1/2) + 4*I*a^3
*log(-1/2*c^2 + I*c*d + 1/2*d^2 + 1/2*(c^2 + d^2 - 2*d + 1)*cos(2*b*x + 2*a
) + 1/2*(I*c^2 + I*d^2 - 2*I*d + I)*sin(2*b*x + 2*a) - 1/2) - 6*I*b*x*polyl
og(3, ((c^2 + 2*I*c*d - d^2 + 1)*cos(2*b*x + 2*a) + (I*c^2 - 2*c*d - I*d^2
+ I)*sin(2*b*x + 2*a))/(c^2 + d^2 + 2*d + 1)) + 6*I*b*x*polylog(3, ((c^2 +
2*I*c*d - d^2 + 1)*cos(2*b*x + 2*a) + (I*c^2 - 2*c*d - I*d^2 + I)*sin(2*b*x
 + 2*a))/(c^2 + d^2 - 2*d + 1)) + 6*I*b*x*polylog(3, ((c^2 - 2*I*c*d - d^2
+ 1)*cos(2*b*x + 2*a) + (-I*c^2 - 2*c*d + I*d^2 - I)*sin(2*b*x + 2*a))/(c^2
 + d^2 + 2*d + 1)) - 6*I*b*x*polylog(3, ((c^2 - 2*I*c*d - d^2 + 1)*cos(2*b*
x + 2*a) + (-I*c^2 - 2*c*d + I*d^2 - I)*sin(2*b*x + 2*a))/(c^2 + d^2 - 2*d
+ 1)) + (-4*I*b^3*x^3 - 4*I*a^3)*log((c^2 + d^2 - (c^2 + 2*I*c*d - d^2 + 1)
*cos(2*b*x + 2*a) + (-I*c^2 + 2*c*d + I*d^2 - I)*sin(2*b*x + 2*a) + 2*d + 1
)/(c^2 + d^2 + 2*d + 1)) + (4*I*b^3*x^3 + 4*I*a^3)*log((c^2 + d^2 - (c^2 -
2*I*c*d - d^2 + 1)*cos(2*b*x + 2*a) + (I*c^2 + 2*c*d - I*d^2 + I)*sin(2*b*x
 + 2*a) + 2*d + 1)/(c^2 + d^2 + 2*d + 1)) + (4*I*b^3*x^3 + 4*I*a^3)*log((c^
2 + d^2 - (c^2 + 2*I*c*d - d^2 + 1)*cos(2*b*x + 2*a) + (-I*c^2 + 2*c*d + I*
d^2 - I)*sin(2*b*x + 2*a) - 2*d + 1)/(c^2 + d^2 - 2*d + 1)) + (-4*I*b^3*x^3
 - 4*I*a^3)*log((c^2 + d^2 - (c^2 - 2*I*c*d - d^2 + 1)*cos(2*b*x + 2*a) + (
I*c^2 + 2*c*d - I*d^2 + I)*sin(2*b*x + 2*a) - 2*d + 1)/(c^2 + d^2 - 2*d + 1
)) + 3*polylog(4, ((c^2 + 2*I*c*d - d^2 + 1)*cos(2*b*x + 2*a) + (I*c^2 - 2*
c*d - I*d^2 + I)*sin(2*b*x + 2*a))/(c^2 + d^2 + 2*d + 1)) - 3*polylog(4, ((
c^2 + 2*I*c*d - d^2 + 1)*cos(2*b*x + 2*a) + (I*c^2 - 2*c*d - I*d^2 + I)*sin
(2*b*x + 2*a))/(c^2 + d^2 - 2*d + 1)) + 3*polylog(4, ((c^2 - 2*I*c*d - d^2
+ 1)*cos(2*b*x + 2*a) + (-I*c^2 - 2*c*d + I*d^2 - I)*sin(2*b*x + 2*a))/(c^2
 + d^2 + 2*d + 1)) - 3*polylog(4, ((c^2 - 2*I*c*d - d^2 + 1)*cos(2*b*x + 2*
a) + (-I*c^2 - 2*c*d + I*d^2 - I)*sin(2*b*x + 2*a))/(c^2 + d^2 - 2*d + 1)))
/b^3
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^2 \operatorname{arccot}(d\cot(bx+a)+c)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*arccot(c+d*cot(b*x+a)),x, algorithm="giac")
[Out] integrate(x^2*arccot(d*cot(b*x + a) + c), x)
```

maple [C] time = 75.34, size = 7900, normalized size = 19.80

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*arccot(c+d*cot(b*x+a)),x)
[Out] result too large to display
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{6}x^3 \arctan\left((d+1)\cos(2bx+2a)+c\sin(2bx+2a)+d-1, c\cos(2bx+2a)-(d+1)\sin(2bx+2a)-c\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*arccot(c+d*cot(b*x+a)),x, algorithm="maxima")
[Out] 1/6*x^3*arctan2((d + 1)*cos(2*b*x + 2*a) + c*sin(2*b*x + 2*a) + d - 1, c*co
s(2*b*x + 2*a) - (d + 1)*sin(2*b*x + 2*a) - c) - 1/6*x^3*arctan2((d - 1)*co
s(2*b*x + 2*a) + c*sin(2*b*x + 2*a) + d + 1, c*cos(2*b*x + 2*a) - (d - 1)*s
in(2*b*x + 2*a) - c) - 4*b*d*integrate(1/3*(2*(c^2 + d^2 + 1)*x^3*cos(2*b*x
 + 2*a)^2 + 2*c*d*x^3*sin(2*b*x + 2*a) + 2*(c^2 + d^2 + 1)*x^3*sin(2*b*x +
2*a)^2 - (c^2 - d^2 + 1)*x^3*cos(2*b*x + 2*a) - (2*c*d*x^3*sin(2*b*x + 2*a)
 + (c^2 - d^2 + 1)*x^3*cos(2*b*x + 2*a))*cos(4*b*x + 4*a) + (2*c*d*x^3*cos(
2*b*x + 2*a) - (c^2 - d^2 + 1)*x^3*sin(2*b*x + 2*a))*sin(4*b*x + 4*a))/(c^4
 + d^4 + 2*(c^2 - 1)*d^2 + (c^4 + d^4 + 2*(c^2 - 1)*d^2 + 2*c^2 + 1)*cos(4*
b*x + 4*a)^2 + 4*(c^4 + d^4 + 2*(c^2 + 1)*d^2 + 2*c^2 + 1)*cos(2*b*x + 2*a)
^2 + (c^4 + d^4 + 2*(c^2 - 1)*d^2 + 2*c^2 + 1)*sin(4*b*x + 4*a)^2 + 4*(c^4
+ d^4 + 2*(c^2 + 1)*d^2 + 2*c^2 + 1)*sin(2*b*x + 2*a)^2 + 2*c^2 + 2*(c^4 +
d^4 - 2*(3*c^2 + 1)*d^2 + 2*c^2 - 2*(c^4 - d^4 + 2*c^2 + 1)*cos(2*b*x + 2*a
) - 4*(c*d^3 + (c^3 + c)*d)*sin(2*b*x + 2*a) + 1)*cos(4*b*x + 4*a) - 4*(c^4
 - d^4 + 2*c^2 + 1)*cos(2*b*x + 2*a) + 4*(2*c*d^3 - 2*(c^3 + c)*d + 2*(c*d^
3 + (c^3 + c)*d)*cos(2*b*x + 2*a) - (c^4 - d^4 + 2*c^2 + 1)*sin(2*b*x + 2*a
))*sin(4*b*x + 4*a) + 8*(c*d^3 + (c^3 + c)*d)*sin(2*b*x + 2*a) + 1), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int x^2\,\mathrm{acot}\left(c+d\cot(a+b\,x)\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*acot(c + d*cot(a + b*x)),x)
[Out] int(x^2*acot(c + d*cot(a + b*x)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*acot(c+d*cot(b*x+a)),x)
```

```
[Out] Timed out
```

3.172 $\int x \cot^{-1}(c + d\cot(a + bx))\,dx$

Optimal. Leaf size=303

$$-\frac{i\text{Li}_3\left(\frac{(ic-d+1)e^{2ia+2ibx}}{ic+d+1}\right)}{8b^2}+\frac{i\text{Li}_3\left(\frac{(c+i(d+1))e^{2ia+2ibx}}{c+i(1-d)}\right)}{8b^2}-\frac{x\text{Li}_2\left(\frac{(ic-d+1)e^{2ia+2ibx}}{ic+d+1}\right)}{4b}+\frac{x\text{Li}_2\left(\frac{(c+i(d+1))e^{2ia+2ibx}}{c+i(1-d)}\right)}{4b}-\frac{1}{4}ix^2\log\left(1-\frac{(ic$$

```
[Out] 1/2*x^2*arccot(c+d*cot(b*x+a))-1/4*I*x^2*ln(1-(1+I*c-d)*exp(2*I*a+2*I*b*x)/
(1+I*c+d))+1/4*I*x^2*ln(1-(c+I*(1+d))*exp(2*I*a+2*I*b*x)/(c+I*(1-d)))-1/4*x
*polylog(2,(1+I*c-d)*exp(2*I*a+2*I*b*x)/(1+I*c+d))/b+1/4*x*polylog(2,(c+I*(
1+d))*exp(2*I*a+2*I*b*x)/(c+I*(1-d)))/b-1/8*I*polylog(3,(1+I*c-d)*exp(2*I*a
+2*I*b*x)/(1+I*c+d))/b^2+1/8*I*polylog(3,(c+I*(1+d))*exp(2*I*a+2*I*b*x)/(c+
I*(1-d)))/b^2
```

Rubi [A] time = 0.42, antiderivative size = 303, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 5, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.385, Rules used = {5178, 2190, 2531, 2282, 6589}

$$-\frac{i\text{PolyLog}\left(3,\frac{(ic-d+1)e^{2ia+2ibx}}{ic+d+1}\right)}{8b^2}+\frac{i\text{PolyLog}\left(3,\frac{(c+i(d+1))e^{2ia+2ibx}}{c+i(1-d)}\right)}{8b^2}-\frac{x\text{PolyLog}\left(2,\frac{(ic-d+1)e^{2ia+2ibx}}{ic+d+1}\right)}{4b}+\frac{x\text{PolyLog}\left(2,\frac{(c\cdots}{\cdots}\right)}{4b}$$

Antiderivative was successfully verified.

```
[In] Int[x*ArcCot[c + d*Cot[a + b*x]],x]
```

```
[Out] (x^2*ArcCot[c + d*Cot[a + b*x]])/2 - (I/4)*x^2*Log[1 - ((1 + I*c - d)*E^((2
*I)*a + (2*I)*b*x))/(1 + I*c + d)] + (I/4)*x^2*Log[1 - ((c + I*(1 + d))*E^(
(2*I)*a + (2*I)*b*x))/(c + I*(1 - d))] - (x*PolyLog[2, ((1 + I*c - d)*E^((2
*I)*a + (2*I)*b*x))/(1 + I*c + d)])/(4*b) + (x*PolyLog[2, ((c + I*(1 + d))*
E^((2*I)*a + (2*I)*b*x))/(c + I*(1 - d))])/(4*b) - ((I/8)*PolyLog[3, ((1 +
I*c - d)*E^((2*I)*a + (2*I)*b*x))/(1 + I*c + d)])/b^2 + ((I/8)*PolyLog[3, (
(c + I*(1 + d))*E^((2*I)*a + (2*I)*b*x))/(c + I*(1 - d))])/b^2
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] && !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] && !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 5178

```
Int[ArcCot[(c_.) + Cot[(a_.) + (b_.)*(x_)]*(d_.)]*((e_.) + (f_.)*(x_))^(m_.
), x_Symbol] :> Simp[((e + f*x)^(m + 1)*ArcCot[c + d*Cot[a + b*x]])/(f*(m +
 1)), x] + (-Dist[(b*(1 + I*c - d))/(f*(m + 1)), Int[((e + f*x)^(m + 1)*E^(
2*I*a + 2*I*b*x))/(1 + I*c + d - (1 + I*c - d)*E^(2*I*a + 2*I*b*x)), x], x]
 + Dist[(b*(1 - I*c + d))/(f*(m + 1)), Int[((e + f*x)^(m + 1)*E^(2*I*a + 2*
I*b*x))/(1 - I*c - d - (1 - I*c + d)*E^(2*I*a + 2*I*b*x)), x], x]) /; FreeQ
[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && NeQ[(c - I*d)^2, -1]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int x\cot^{-1}(c+d\cot(a+bx))\,dx = \frac{1}{2}x^2\cot^{-1}(c+d\cot(a+bx)) - \frac{1}{2}(b(1+ic-d))\int \frac{e^{2ia+2ibx}x^2}{1+ic+d+(-1-ic+d)e^{2ia\cdots}}$$

$$= \frac{1}{2}x^2\cot^{-1}(c+d\cot(a+bx)) - \frac{1}{4}ix^2\log\left(1-\frac{(1+ic-d)e^{2ia+2ibx}}{1+ic+d}\right) + \frac{1}{4}ix^2\log\left(1\cdots\right.$$

$$= \frac{1}{2}x^2\cot^{-1}(c+d\cot(a+bx)) - \frac{1}{4}ix^2\log\left(1-\frac{(1+ic-d)e^{2ia+2ibx}}{1+ic+d}\right) + \frac{1}{4}ix^2\log\left(1\cdots\right.$$

$$= \frac{1}{2}x^2\cot^{-1}(c+d\cot(a+bx)) - \frac{1}{4}ix^2\log\left(1-\frac{(1+ic-d)e^{2ia+2ibx}}{1+ic+d}\right) + \frac{1}{4}ix^2\log\left(1\cdots\right.$$

$$= \frac{1}{2}x^2\cot^{-1}(c+d\cot(a+bx)) - \frac{1}{4}ix^2\log\left(1-\frac{(1+ic-d)e^{2ia+2ibx}}{1+ic+d}\right) + \frac{1}{4}ix^2\log\left(1\cdots\right.$$

Mathematica [A] time = 0.60, size = 270, normalized size = 0.89

$$\frac{1}{2}x^2\cot^{-1}(d\cot(a+bx)+c) - \frac{i\left(2b^2x^2\log\left(1-\frac{(c+i(d-1))e^{2i(a+bx)}}{c-i(d+1)}\right) - 2b^2x^2\log\left(1-\frac{(c+i(d+1))e^{2i(a+bx)}}{c-id+i}\right) - 2ibx\text{Li}_2\left(\frac{(c+i(d-1))\cdots}{c-i(d\cdots}\right.\cdots}{8b^2\cdots}$$

Antiderivative was successfully verified.

```
[In] Integrate[x*ArcCot[c + d*Cot[a + b*x]],x]
```

```
[Out] (x^2*ArcCot[c + d*Cot[a + b*x]])/2 - ((I/8)*(2*b^2*x^2*Log[1 - ((c + I*(-1
+ d))*E^((2*I)*(a + b*x)))/(c - I*(1 + d))] - 2*b^2*x^2*Log[1 - ((c + I*(1
+ d))*E^((2*I)*(a + b*x)))/(I + c - I*d)] - (2*I)*b*x*PolyLog[2, ((c + I*(-
1 + d))*E^((2*I)*(a + b*x)))/(c - I*(1 + d))] + (2*I)*b*x*PolyLog[2, ((c +
I*(1 + d))*E^((2*I)*(a + b*x)))/(I + c - I*d)] + PolyLog[3, ((c + I*(-1 + d
))*E^((2*I)*(a + b*x)))/(c - I*(1 + d))] - PolyLog[3, ((c + I*(1 + d))*E^((
2*I)*(a + b*x)))/(I + c - I*d)]))/b^2
```

fricas [C] time = 1.08, size = 1285, normalized size = 4.24

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*arccot(c+d*cot(b*x+a)),x, algorithm="fricas")
```

```
[Out] 1/16*(8*b^2*x^2*arccot(d*cot(b*x + a) + c) - 2*b*x*dilog(-(c^2 + d^2 - (c^2
 + 2*I*c*d - d^2 + 1)*cos(2*b*x + 2*a) + (-I*c^2 + 2*c*d + I*d^2 - I)*sin(2
*b*x + 2*a) + 2*d + 1)/(c^2 + d^2 + 2*d + 1) + 1) - 2*b*x*dilog(-(c^2 + d^2
 - (c^2 - 2*I*c*d - d^2 + 1)*cos(2*b*x + 2*a) + (I*c^2 + 2*c*d - I*d^2 + I)
*sin(2*b*x + 2*a) + 2*d + 1)/(c^2 + d^2 + 2*d + 1) + 1) + 2*b*x*dilog(-(c^2
 + d^2 - (c^2 + 2*I*c*d - d^2 + 1)*cos(2*b*x + 2*a) + (-I*c^2 + 2*c*d + I*d
^2 - I)*sin(2*b*x + 2*a) - 2*d + 1)/(c^2 + d^2 - 2*d + 1) + 1) + 2*b*x*dilo
g(-(c^2 + d^2 - (c^2 - 2*I*c*d - d^2 + 1)*cos(2*b*x + 2*a) + (I*c^2 + 2*c*d
 - I*d^2 + I)*sin(2*b*x + 2*a) - 2*d + 1)/(c^2 + d^2 - 2*d + 1) + 1) - 2*I*
a^2*log(1/2*c^2 + I*c*d - 1/2*d^2 - 1/2*(c^2 + d^2 + 2*d + 1)*cos(2*b*x + 2
*a) + 1/2*(I*c^2 + I*d^2 + 2*I*d + I)*sin(2*b*x + 2*a) + 1/2) + 2*I*a^2*log
(1/2*c^2 + I*c*d - 1/2*d^2 - 1/2*(c^2 + d^2 - 2*d + 1)*cos(2*b*x + 2*a) + 1
/2*(I*c^2 + I*d^2 - 2*I*d + I)*sin(2*b*x + 2*a) + 1/2) + 2*I*a^2*log(-1/2*c
^2 + I*c*d + 1/2*d^2 + 1/2*(c^2 + d^2 + 2*d + 1)*cos(2*b*x + 2*a) + 1/2*(I*
c^2 + I*d^2 + 2*I*d + I)*sin(2*b*x + 2*a) - 1/2) - 2*I*a^2*log(-1/2*c^2 + I
*c*d + 1/2*d^2 + 1/2*(c^2 + d^2 - 2*d + 1)*cos(2*b*x + 2*a) + 1/2*(I*c^2 +
I*d^2 - 2*I*d + I)*sin(2*b*x + 2*a) - 1/2) + (-2*I*b^2*x^2 + 2*I*a^2)*log((
c^2 + d^2 - (c^2 + 2*I*c*d - d^2 + 1)*cos(2*b*x + 2*a) + (-I*c^2 + 2*c*d +
I*d^2 - I)*sin(2*b*x + 2*a) + 2*d + 1)/(c^2 + d^2 + 2*d + 1)) + (2*I*b^2*x^
2 - 2*I*a^2)*log((c^2 + d^2 - (c^2 - 2*I*c*d - d^2 + 1)*cos(2*b*x + 2*a) +
(I*c^2 + 2*c*d - I*d^2 + I)*sin(2*b*x + 2*a) + 2*d + 1)/(c^2 + d^2 + 2*d +
1)) + (2*I*b^2*x^2 - 2*I*a^2)*log((c^2 + d^2 - (c^2 + 2*I*c*d - d^2 + 1)*co
s(2*b*x + 2*a) + (-I*c^2 + 2*c*d + I*d^2 - I)*sin(2*b*x + 2*a) - 2*d + 1)/(
c^2 + d^2 - 2*d + 1)) + (-2*I*b^2*x^2 + 2*I*a^2)*log((c^2 + d^2 - (c^2 - 2*
I*c*d - d^2 + 1)*cos(2*b*x + 2*a) + (I*c^2 + 2*c*d - I*d^2 + I)*sin(2*b*x +
 2*a) - 2*d + 1)/(c^2 + d^2 - 2*d + 1)) - I*polylog(3, ((c^2 + 2*I*c*d - d^
2 + 1)*cos(2*b*x + 2*a) + (I*c^2 - 2*c*d - I*d^2 + I)*sin(2*b*x + 2*a))/(c^
2 + d^2 + 2*d + 1)) + I*polylog(3, ((c^2 + 2*I*c*d - d^2 + 1)*cos(2*b*x + 2
*a) + (I*c^2 - 2*c*d - I*d^2 + I)*sin(2*b*x + 2*a))/(c^2 + d^2 - 2*d + 1))
+ I*polylog(3, ((c^2 - 2*I*c*d - d^2 + 1)*cos(2*b*x + 2*a) + (-I*c^2 - 2*c*
d + I*d^2 - I)*sin(2*b*x + 2*a))/(c^2 + d^2 + 2*d + 1)) - I*polylog(3, ((c^
2 - 2*I*c*d - d^2 + 1)*cos(2*b*x + 2*a) + (-I*c^2 - 2*c*d + I*d^2 - I)*sin(
2*b*x + 2*a))/(c^2 + d^2 - 2*d + 1)))/b^2
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x \operatorname{arccot}\left(d \cot\left(bx + a\right) + c\right)\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*arccot(c+d*cot(b*x+a)),x, algorithm="giac")
```

```
[Out] integrate(x*arccot(d*cot(b*x + a) + c), x)
```

maple [C] time = 6.58, size = 7532, normalized size = 24.86

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*arccot(c+d*cot(b*x+a)),x)
```

```
[Out] result too large to display
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{4}\,x^2 \arctan\left(\left(d+1\right)\cos\left(2\,bx+2\,a\right)+c\sin\left(2\,bx+2\,a\right)+d-1, c\cos\left(2\,bx+2\,a\right)-\left(d+1\right)\sin\left(2\,bx+2\,a\right)-c\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*arccot(c+d*cot(b*x+a)),x, algorithm="maxima")
```

```
[Out] 1/4*x^2*arctan2((d + 1)*cos(2*b*x + 2*a) + c*sin(2*b*x + 2*a) + d - 1, c*co
s(2*b*x + 2*a) - (d + 1)*sin(2*b*x + 2*a) - c) - 1/4*x^2*arctan2((d - 1)*co
s(2*b*x + 2*a) + c*sin(2*b*x + 2*a) + d + 1, c*cos(2*b*x + 2*a) - (d - 1)*s
in(2*b*x + 2*a) - c) - 2*b*d*integrate((2*(c^2 + d^2 + 1)*x^2*cos(2*b*x + 2
*a)^2 + 2*c*d*x^2*sin(2*b*x + 2*a) + 2*(c^2 + d^2 + 1)*x^2*sin(2*b*x + 2*a)
^2 - (c^2 - d^2 + 1)*x^2*cos(2*b*x + 2*a) - (2*c*d*x^2*sin(2*b*x + 2*a) + (
c^2 - d^2 + 1)*x^2*cos(2*b*x + 2*a))*cos(4*b*x + 4*a) + (2*c*d*x^2*cos(2*b*
x + 2*a) - (c^2 - d^2 + 1)*x^2*sin(2*b*x + 2*a))*sin(4*b*x + 4*a))/(c^4 + d
^4 + 2*(c^2 - 1)*d^2 + (c^4 + d^4 + 2*(c^2 - 1)*d^2 + 2*c^2 + 1)*cos(4*b*x
+ 4*a)^2 + 4*(c^4 + d^4 + 2*(c^2 + 1)*d^2 + 2*c^2 + 1)*cos(2*b*x + 2*a)^2 +
 (c^4 + d^4 + 2*(c^2 - 1)*d^2 + 2*c^2 + 1)*sin(4*b*x + 4*a)^2 + 4*(c^4 + d^
4 + 2*(c^2 + 1)*d^2 + 2*c^2 + 1)*sin(2*b*x + 2*a)^2 + 2*c^2 + 2*(c^4 + d^4
- 2*(3*c^2 + 1)*d^2 + 2*c^2 - 2*(c^4 - d^4 + 2*c^2 + 1)*cos(2*b*x + 2*a) -
4*(c*d^3 + (c^3 + c)*d)*sin(2*b*x + 2*a) + 1)*cos(4*b*x + 4*a) - 4*(c^4 - d
^4 + 2*c^2 + 1)*cos(2*b*x + 2*a) + 4*(2*c*d^3 - 2*(c^3 + c)*d + 2*(c*d^3 +
(c^3 + c)*d)*cos(2*b*x + 2*a) - (c^4 - d^4 + 2*c^2 + 1)*sin(2*b*x + 2*a))*s
in(4*b*x + 4*a) + 8*(c*d^3 + (c^3 + c)*d)*sin(2*b*x + 2*a) + 1), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int x\,\mathrm{acot}\left(c+d\cot\left(a+b\,x\right)\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*acot(c + d*cot(a + b*x)),x)
```

```
[Out] int(x*acot(c + d*cot(a + b*x)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*acot(c+d*cot(b*x+a)),x)
```

```
[Out] Timed out
```

3.173 $\int \cot^{-1}(c + d\cot(a + bx))\,dx$

Optimal. Leaf size=198

$$-\frac{\mathrm{Li}_2\left(\frac{(ic-d+1)e^{2ia+2ibx}}{ic+d+1}\right)}{4b}+\frac{\mathrm{Li}_2\left(\frac{(c+i(d+1))e^{2ia+2ibx}}{c+i(1-d)}\right)}{4b}-\frac{1}{2}ix\log\left(1-\frac{(ic-d+1)e^{2ia+2ibx}}{ic+d+1}\right)+\frac{1}{2}ix\log\left(1-\frac{(c+i(d+1))e^{2ia\cdot}}{c+i(1-d)}\right.$$

```
[Out] x*arccot(c+d*cot(b*x+a))-1/2*I*x*ln(1-(1+I*c-d)*exp(2*I*a+2*I*b*x)/(1+I*c+d
))+1/2*I*x*ln(1-(c+I*(1+d))*exp(2*I*a+2*I*b*x)/(c+I*(1-d)))-1/4*polylog(2,(
1+I*c-d)*exp(2*I*a+2*I*b*x)/(1+I*c+d))/b+1/4*polylog(2,(c+I*(1+d))*exp(2*I*
a+2*I*b*x)/(c+I*(1-d)))/b
```

Rubi [A] time = 0.25, antiderivative size = 198, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 4, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.364, Rules used = {5170, 2190, 2279, 2391}

$$-\frac{\text{PolyLog}\left(2,\frac{(ic-d+1)e^{2ia+2ibx}}{ic+d+1}\right)}{4b}+\frac{\text{PolyLog}\left(2,\frac{(c+i(d+1))e^{2ia+2ibx}}{c+i(1-d)}\right)}{4b}-\frac{1}{2}ix\log\left(1-\frac{(ic-d+1)e^{2ia+2ibx}}{ic+d+1}\right)+\frac{1}{2}ix\log\left(1-\right.$$

Antiderivative was successfully verified.

```
[In] Int[ArcCot[c + d*Cot[a + b*x]],x]
```

```
[Out] x*ArcCot[c + d*Cot[a + b*x]] - (I/2)*x*Log[1 - ((1 + I*c - d)*E^((2*I)*a +
(2*I)*b*x))/(1 + I*c + d)] + (I/2)*x*Log[1 - ((c + I*(1 + d))*E^((2*I)*a +
(2*I)*b*x))/(c + I*(1 - d))] - PolyLog[2, ((1 + I*c - d)*E^((2*I)*a + (2*I)
*b*x))/(1 + I*c + d)]/(4*b) + PolyLog[2, ((c + I*(1 + d))*E^((2*I)*a + (2*I
)*b*x))/(c + I*(1 - d))]/(4*b)
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 5170

```
Int[ArcCot[(c_.) + Cot[(a_.) + (b_.)*(x_)]*(d_.)], x_Symbol] :> Simp[x*ArcC
ot[c + d*Cot[a + b*x]], x] + (-Dist[b*(1 + I*c - d), Int[(x*E^(2*I*a + 2*I*
b*x))/(1 + I*c + d - (1 + I*c - d)*E^(2*I*a + 2*I*b*x)), x], x] + Dist[b*(1
 - I*c + d), Int[(x*E^(2*I*a + 2*I*b*x))/(1 - I*c - d - (1 - I*c + d)*E^(2*
I*a + 2*I*b*x)), x], x]) /; FreeQ[{a, b, c, d}, x] && NeQ[(c - I*d)^2, -1]
```

Rubi steps

$$\int \cot^{-1}(c + d\cot(a+bx))\,dx = x\cot^{-1}(c + d\cot(a+bx)) - (b(1+ic-d))\int \frac{e^{2ia+2ibx}x}{1+ic+d+(-1-ic+d)e^{2ia+2ibx}}\,d$$

$$= x\cot^{-1}(c + d\cot(a+bx)) - \frac{1}{2}ix\log\left(1 - \frac{(1+ic-d)e^{2ia+2ibx}}{1+ic+d}\right) + \frac{1}{2}ix\log\left(1 - \frac{(c}{}\right.$$

$$= x\cot^{-1}(c + d\cot(a+bx)) - \frac{1}{2}ix\log\left(1 - \frac{(1+ic-d)e^{2ia+2ibx}}{1+ic+d}\right) + \frac{1}{2}ix\log\left(1 - \frac{(c}{}\right.$$

$$= x\cot^{-1}(c + d\cot(a+bx)) - \frac{1}{2}ix\log\left(1 - \frac{(1+ic-d)e^{2ia+2ibx}}{1+ic+d}\right) + \frac{1}{2}ix\log\left(1 - \frac{(c}{}\right.$$

Mathematica [B] time = 13.05, size = 1649, normalized size = 8.33

result too large to display

Warning: Unable to verify antiderivative.

```
[In] Integrate[ArcCot[c + d*Cot[a + b*x]],x]
```

```
[Out] x*ArcCot[c + d*Cot[a + b*x]] - (d*(4*a*Sqrt[-d^2]*ArcTan[(c*d + Tan[a + b*x
] + c^2*Tan[a + b*x])/d] + I*d*Log[1 + I*Tan[a + b*x]]*Log[(c*d - Sqrt[-d^2
] + Tan[a + b*x] + c^2*Tan[a + b*x])/(I + I*c^2 + c*d - Sqrt[-d^2])] + I*d*
Log[1 - I*Tan[a + b*x]]*Log[(c*d + Sqrt[-d^2] + Tan[a + b*x] + c^2*Tan[a +
b*x])/(-I - I*c^2 + c*d + Sqrt[-d^2])] - I*d*Log[1 + I*Tan[a + b*x]]*Log[(c
*d + Sqrt[-d^2] + Tan[a + b*x] + c^2*Tan[a + b*x])/(I + I*c^2 + c*d + Sqrt[
-d^2])] - I*d*Log[1 - I*Tan[a + b*x]]*Log[(-(c*d) + Sqrt[-d^2] - (1 + c^2)*
Tan[a + b*x])/(I + I*c^2 - c*d + Sqrt[-d^2])] - I*d*PolyLog[2, ((1 + c^2)*(
1 - I*Tan[a + b*x]))/(1 + c^2 + I*c*d - I*Sqrt[-d^2])] + I*d*PolyLog[2, ((1
 + c^2)*(1 - I*Tan[a + b*x]))/(1 + c^2 + I*c*d + I*Sqrt[-d^2])] - I*d*PolyL
og[2, ((1 + c^2)*(1 + I*Tan[a + b*x]))/(1 + c^2 - I*c*d - I*Sqrt[-d^2])] +
I*d*PolyLog[2, ((1 + c^2)*(1 + I*Tan[a + b*x]))/(1 + c^2 - I*c*d + I*Sqrt[-
d^2])])*((2*a)/(b*(-1 - c^2 - d^2 + Cos[2*(a + b*x)] + c^2*Cos[2*(a + b*x)]
 - d^2*Cos[2*(a + b*x)] - 2*c*d*Sin[2*(a + b*x)])) - (2*(a + b*x))/(b*(-1 -
 c^2 - d^2 + Cos[2*(a + b*x)] + c^2*Cos[2*(a + b*x)] - d^2*Cos[2*(a + b*x)]
 - 2*c*d*Sin[2*(a + b*x)]))))/((d*Log[1 - ((1 + c^2)*(1 - I*Tan[a + b*x]))/
(1 + c^2 + I*c*d - I*Sqrt[-d^2])]*Sec[a + b*x]^2)/(1 - I*Tan[a + b*x]) - (d
*Log[1 - ((1 + c^2)*(1 - I*Tan[a + b*x]))/(1 + c^2 + I*c*d + I*Sqrt[-d^2])]
*Sec[a + b*x]^2)/(1 - I*Tan[a + b*x]) + (d*Log[(c*d + Sqrt[-d^2] + Tan[a +
b*x] + c^2*Tan[a + b*x])/(-I - I*c^2 + c*d + Sqrt[-d^2])]*Sec[a + b*x]^2)/(
1 - I*Tan[a + b*x]) - (d*Log[(-(c*d) + Sqrt[-d^2] - (1 + c^2)*Tan[a + b*x])
/(I + I*c^2 - c*d + Sqrt[-d^2])]*Sec[a + b*x]^2)/(1 - I*Tan[a + b*x]) - (d*
Log[1 - ((1 + c^2)*(1 + I*Tan[a + b*x]))/(1 + c^2 - I*c*d - I*Sqrt[-d^2])]*
Sec[a + b*x]^2)/(1 + I*Tan[a + b*x]) + (d*Log[1 - ((1 + c^2)*(1 + I*Tan[a +
 b*x]))/(1 + c^2 - I*c*d + I*Sqrt[-d^2])]*Sec[a + b*x]^2)/(1 + I*Tan[a + b*
x]) - (d*Log[(c*d - Sqrt[-d^2] + Tan[a + b*x] + c^2*Tan[a + b*x])/(I + I*c^
2 + c*d - Sqrt[-d^2])]*Sec[a + b*x]^2)/(1 + I*Tan[a + b*x]) + (d*Log[(c*d +
 Sqrt[-d^2] + Tan[a + b*x] + c^2*Tan[a + b*x])/(I + I*c^2 + c*d + Sqrt[-d^2
])]*Sec[a + b*x]^2)/(1 + I*Tan[a + b*x]) + (I*d*Log[1 + I*Tan[a + b*x]]*(Se
c[a + b*x]^2 + c^2*Sec[a + b*x]^2))/(c*d - Sqrt[-d^2] + Tan[a + b*x] + c^2*
Tan[a + b*x]) + (I*d*Log[1 - I*Tan[a + b*x]]*(Sec[a + b*x]^2 + c^2*Sec[a +
b*x]^2))/(c*d + Sqrt[-d^2] + Tan[a + b*x] + c^2*Tan[a + b*x]) - (I*d*Log[1
+ I*Tan[a + b*x]]*(Sec[a + b*x]^2 + c^2*Sec[a + b*x]^2))/(c*d + Sqrt[-d^2]
+ Tan[a + b*x] + c^2*Tan[a + b*x]) + (I*(1 + c^2)*d*Log[1 - I*Tan[a + b*x]]
*Sec[a + b*x]^2)/(-(c*d) + Sqrt[-d^2] - (1 + c^2)*Tan[a + b*x]) + (4*a*Sqrt
[-d^2]*(Sec[a + b*x]^2 + c^2*Sec[a + b*x]^2))/(d*(1 + (c*d + Tan[a + b*x] +
 c^2*Tan[a + b*x])^2/d^2)))
```

fricas [B] time = 0.98, size = 961, normalized size = 4.85

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(c+d*cot(b*x+a)),x, algorithm="fricas")
```

```
[Out] 1/8*(8*b*x*arccot(d*cot(b*x + a) + c) + 2*I*a*log(1/2*c^2 + I*c*d - 1/2*d^2
 - 1/2*(c^2 + d^2 + 2*d + 1)*cos(2*b*x + 2*a) + 1/2*(I*c^2 + I*d^2 + 2*I*d
+ I)*sin(2*b*x + 2*a) + 1/2) - 2*I*a*log(1/2*c^2 + I*c*d - 1/2*d^2 - 1/2*(c
^2 + d^2 - 2*d + 1)*cos(2*b*x + 2*a) + 1/2*(I*c^2 + I*d^2 - 2*I*d + I)*sin(
2*b*x + 2*a) + 1/2) - 2*I*a*log(-1/2*c^2 + I*c*d + 1/2*d^2 + 1/2*(c^2 + d^2
 + 2*d + 1)*cos(2*b*x + 2*a) + 1/2*(I*c^2 + I*d^2 + 2*I*d + I)*sin(2*b*x +
2*a) - 1/2) + 2*I*a*log(-1/2*c^2 + I*c*d + 1/2*d^2 + 1/2*(c^2 + d^2 - 2*d +
 1)*cos(2*b*x + 2*a) + 1/2*(I*c^2 + I*d^2 - 2*I*d + I)*sin(2*b*x + 2*a) - 1
/2) + (-2*I*b*x - 2*I*a)*log((c^2 + d^2 - (c^2 + 2*I*c*d - d^2 + 1)*cos(2*b
*x + 2*a) + (-I*c^2 + 2*c*d + I*d^2 - I)*sin(2*b*x + 2*a) + 2*d + 1)/(c^2 +
 d^2 + 2*d + 1)) + (2*I*b*x + 2*I*a)*log((c^2 + d^2 - (c^2 - 2*I*c*d - d^2
+ 1)*cos(2*b*x + 2*a) + (I*c^2 + 2*c*d - I*d^2 + I)*sin(2*b*x + 2*a) + 2*d
+ 1)/(c^2 + d^2 + 2*d + 1)) + (2*I*b*x + 2*I*a)*log((c^2 + d^2 - (c^2 + 2*I
*c*d - d^2 + 1)*cos(2*b*x + 2*a) + (-I*c^2 + 2*c*d + I*d^2 - I)*sin(2*b*x +
 2*a) - 2*d + 1)/(c^2 + d^2 - 2*d + 1)) + (-2*I*b*x - 2*I*a)*log((c^2 + d^2
 - (c^2 - 2*I*c*d - d^2 + 1)*cos(2*b*x + 2*a) + (I*c^2 + 2*c*d - I*d^2 + I)
*sin(2*b*x + 2*a) - 2*d + 1)/(c^2 + d^2 - 2*d + 1)) - dilog(-(c^2 + d^2 - (
c^2 + 2*I*c*d - d^2 + 1)*cos(2*b*x + 2*a) + (-I*c^2 + 2*c*d + I*d^2 - I)*si
n(2*b*x + 2*a) + 2*d + 1)/(c^2 + d^2 + 2*d + 1) + 1) - dilog(-(c^2 + d^2 -
(c^2 - 2*I*c*d - d^2 + 1)*cos(2*b*x + 2*a) + (I*c^2 + 2*c*d - I*d^2 + I)*si
n(2*b*x + 2*a) + 2*d + 1)/(c^2 + d^2 + 2*d + 1) + 1) + dilog(-(c^2 + d^2 -
(c^2 + 2*I*c*d - d^2 + 1)*cos(2*b*x + 2*a) + (-I*c^2 + 2*c*d + I*d^2 - I)*s
in(2*b*x + 2*a) - 2*d + 1)/(c^2 + d^2 - 2*d + 1) + 1) + dilog(-(c^2 + d^2 -
 (c^2 - 2*I*c*d - d^2 + 1)*cos(2*b*x + 2*a) + (I*c^2 + 2*c*d - I*d^2 + I)*s
in(2*b*x + 2*a) - 2*d + 1)/(c^2 + d^2 - 2*d + 1) + 1))/b
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \operatorname{arccot}\left(d\cot\left(bx+a\right)+c\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(c+d*cot(b*x+a)),x, algorithm="giac")
```

```
[Out] integrate(arccot(d*cot(b*x + a) + c), x)
```

maple [B] time = 1.22, size = 1160, normalized size = 5.86

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arccot(c+d*cot(b*x+a)),x)
```

```
[Out] -1/2/b*arccot(c+d*cot(b*x+a))*Pi+1/b*arccot(c+d*cot(b*x+a))*arccot(cot(b*x+
a))-1/b*arctan(d*((c+d*cot(b*x+a))/d-c/d)+c)*arctan((c+d*cot(b*x+a))/d-c/d)
+1/2*I*d/b*ln(1-(-I*d+I+c)*(1+I*(d*((c+d*cot(b*x+a))/d-c/d)+c))^2/((d*((c+d
*cot(b*x+a))/d-c/d)+c)^2+1)/(I*d+I-c))*arctan(d*((c+d*cot(b*x+a))/d-c/d)+c)
/(1+I*c+d)+1/2*I/b*ln(1-(-I*d+I+c)*(1+I*(d*((c+d*cot(b*x+a))/d-c/d)+c))^2/(
(d*((c+d*cot(b*x+a))/d-c/d)+c)^2+1)/(I*d+I-c))*arctan(d*((c+d*cot(b*x+a))/d
-c/d)+c)/(1+I*c+d)+1/2*I/b/(-I*d-I+c)*ln(1-(-I*d+I+c)*(1+I*(d*((c+d*cot(b*x
+a))/d-c/d)+c))^2/((d*((c+d*cot(b*x+a))/d-c/d)+c)^2+1)/(I*d+I-c))*arctan(d*
((c+d*cot(b*x+a))/d-c/d)+c)*c+1/2*d/b*arctan(d*((c+d*cot(b*x+a))/d-c/d)+c)^
```

```
2/(1+I*c+d)+1/4*d/b*polylog(2,(-I*d+I+c)*(1+I*(d*((c+d*cot(b*x+a))/d-c/d)+c
))^2/((d*((c+d*cot(b*x+a))/d-c/d)+c)^2+1)/(I*d+I-c))/(1+I*c+d)+1/2/b*arctan
(d*((c+d*cot(b*x+a))/d-c/d)+c)^2/(1+I*c+d)+1/2/b/(-I*d-I+c)*arctan(d*((c+d*
cot(b*x+a))/d-c/d)+c)^2*c+1/4/b*polylog(2,(-I*d+I+c)*(1+I*(d*((c+d*cot(b*x+
a))/d-c/d)+c))^2/((d*((c+d*cot(b*x+a))/d-c/d)+c)^2+1)/(I*d+I-c))/(1+I*c+d)+
1/4/b/(-I*d-I+c)*polylog(2,(-I*d+I+c)*(1+I*(d*((c+d*cot(b*x+a))/d-c/d)+c))^
2/((d*((c+d*cot(b*x+a))/d-c/d)+c)^2+1)/(I*d+I-c))*c-1/2*I/b*arctan(d*((c+d*
cot(b*x+a))/d-c/d)+c)*ln(1-(I+I*d+c)*(1+I*(d*((c+d*cot(b*x+a))/d-c/d)+c))^2
/((d*((c+d*cot(b*x+a))/d-c/d)+c)^2+1)/(-I*d+I-c))-1/2/b*arctan(d*((c+d*cot(
b*x+a))/d-c/d)+c)^2-1/4/b*polylog(2,(I+I*d+c)*(1+I*(d*((c+d*cot(b*x+a))/d-c
/d)+c))^2/((d*((c+d*cot(b*x+a))/d-c/d)+c)^2+1)/(-I*d+I-c))
```

maxima [B] time = 0.54, size = 532, normalized size = 2.69

$$d\left(\frac{8\,(bx+a)\arctan\left(\frac{cd+\left(c^2+1\right)\tan(bx+a)}{d}\right)}{d}-\frac{8\,(bx+a)\arctan\left(\frac{cd+\left(c^2+1\right)\tan(bx+a)}{d}\right)-4\,\arctan\left(\frac{cd+\left(c^2+1\right)\tan(bx+a)}{d}\right)\arctan\left(\frac{cd+\left(c^2+d+1\right)\tan(bx+a)}{c^2+d^2+2\,d+1},-\frac{cd\tan(bx+}{c^2+d^2}\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(c+d*cot(b*x+a)),x, algorithm="maxima")
```

```
[Out] 1/8*(d*(8*(b*x + a)*arctan((c*d + (c^2 + 1)*tan(b*x + a))/d)/d - (8*(b*x +
a)*arctan((c*d + (c^2 + 1)*tan(b*x + a))/d) - 4*arctan((c*d + (c^2 + 1)*tan
(b*x + a))/d)*arctan2((c*d + (c^2 + d + 1)*tan(b*x + a))/(c^2 + d^2 + 2*d +
 1), -(c*d*tan(b*x + a) - c^2 - d - 1)/(c^2 + d^2 + 2*d + 1)) + 4*arctan((c
*d + (c^2 + 1)*tan(b*x + a))/d)*arctan2(-(c*d + (c^2 - d + 1)*tan(b*x + a))
/(c^2 + d^2 - 2*d + 1), -(c*d*tan(b*x + a) - c^2 + d - 1)/(c^2 + d^2 - 2*d
+ 1)) - (log(((c^2 + 1)*tan(b*x + a)^2 + c^2 + 1)/(c^2 + d^2 + 2*d + 1)) -
log(((c^2 + 1)*tan(b*x + a)^2 + c^2 + 1)/(c^2 + d^2 - 2*d + 1)))*log((c^2 +
 1)*d^2 + 2*(c^3 + c)*d*tan(b*x + a) + (c^4 + 2*c^2 + 1)*tan(b*x + a)^2) -
2*dilog(((I*c - 1)*tan(b*x + a) + I*d)/(c + I*d + I)) + 2*dilog(((I*c + 1)*
tan(b*x + a) + I*d)/(c + I*d - I)) + 2*dilog(-((I*c - 1)*tan(b*x + a) + I*d
)/(c - I*d + I)) - 2*dilog(-((I*c + 1)*tan(b*x + a) + I*d)/(c - I*d - I)))/
d) + 8*(b*x + a)*arccot(c + d/tan(b*x + a)) - 8*(b*x + a)*arctan((c*d + (c^
2 + 1)*tan(b*x + a))/d))/b
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \mathrm{acot}\left(c+d\cot\left(a+b\,x\right)\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(acot(c + d*cot(a + b*x)),x)
```

```
[Out] int(acot(c + d*cot(a + b*x)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(acot(c+d*cot(b*x+a)),x)
```

```
[Out] Timed out
```

3.174 $\int \frac{\cot^{-1}(c+d\cot(a+bx))}{x} \, dx$

Optimal. Leaf size=18

$$\mathrm{Int}\left(\frac{\cot^{-1}(d\cot(a+bx)+c)}{x},x\right)$$

```
[Out] CannotIntegrate(arccot(c+d*cot(b*x+a))/x,x)
```

Rubi [A] time = 0.12, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\cot^{-1}(c+d\cot(a+bx))}{x} \, dx$$

Verification is Not applicable to the result.

```
[In] Int[ArcCot[c + d*Cot[a + b*x]]/x,x]
```

```
[Out] Defer[Int][ArcCot[c + d*Cot[a + b*x]]/x, x]
```

Rubi steps

$$\int \frac{\cot^{-1}(c+d\cot(a+bx))}{x} \, dx = \int \frac{\cot^{-1}(c+d\cot(a+bx))}{x} \, dx$$

Mathematica [A] time = 0.42, size = 0, normalized size = 0.00

$$\int \frac{\cot^{-1}(c+d\cot(a+bx))}{x} \, dx$$

Verification is Not applicable to the result.

```
[In] Integrate[ArcCot[c + d*Cot[a + b*x]]/x,x]
```

```
[Out] Integrate[ArcCot[c + d*Cot[a + b*x]]/x, x]
```

fricas [A] time = 0.52, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{\operatorname{arccot}\left(d\cot\left(bx+a\right)+c\right)}{x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(c+d*cot(b*x+a))/x,x, algorithm="fricas")
```

```
[Out] integral(arccot(d*cot(b*x + a) + c)/x, x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{arccot}\left(d\cot\left(bx+a\right)+c\right)}{x} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(c+d*cot(b*x+a))/x,x, algorithm="giac")
```

```
[Out] integrate(arccot(d*cot(b*x + a) + c)/x, x)
```

maple [A] time = 1.53, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{arccot}\left(c+d\cot\left(bx+a\right)\right)}{x} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arccot(c+d*cot(b*x+a))/x,x)
[Out] int(arccot(c+d*cot(b*x+a))/x,x)
```

maxima [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(c+d*cot(b*x+a))/x,x, algorithm="maxima")
[Out] Timed out
```

mupad [A] time = 0.00, size = -1, normalized size = -0.06

$$\int \frac{\mathrm{acot}\left(c+d\,\mathrm{cot}\left(a+b\,x\right)\right)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(acot(c + d*cot(a + b*x))/x,x)
[Out] int(acot(c + d*cot(a + b*x))/x, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(acot(c+d*cot(b*x+a))/x,x)
[Out] Timed out
```

3.175 $\int x^2 \cot^{-1}(c + (1 - ic)\cot(a + bx))\, dx$

Optimal. Leaf size=154

$$\frac{\text{Li}_4\left(ice^{2ia+2ibx}\right)}{8b^3}-\frac{ix\text{Li}_3\left(ice^{2ia+2ibx}\right)}{4b^2}-\frac{x^2\text{Li}_2\left(ice^{2ia+2ibx}\right)}{4b}-\frac{1}{6}ix^3\log\left(1-ice^{2ia+2ibx}\right)+\frac{1}{3}x^3\cot^{-1}(c+(1-ic)\cot(a+bx$$

```
[Out] -1/12*b*x^4+1/3*x^3*(Pi-arccot(-c-(1-I*c)*cot(b*x+a)))-1/6*I*x^3*ln(1-I*c*e
xp(2*I*a+2*I*b*x))-1/4*x^2*polylog(2,I*c*exp(2*I*a+2*I*b*x))/b-1/4*I*x*poly
log(3,I*c*exp(2*I*a+2*I*b*x))/b^2+1/8*polylog(4,I*c*exp(2*I*a+2*I*b*x))/b^3
```

Rubi [A] time = 0.27, antiderivative size = 154, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 7, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333, Rules used = {5174, 2184, 2190, 2531, 6609, 2282, 6589}

$$-\frac{ix\text{PolyLog}\left(3,ice^{2ia+2ibx}\right)}{4b^2}+\frac{\text{PolyLog}\left(4,ice^{2ia+2ibx}\right)}{8b^3}-\frac{x^2\text{PolyLog}\left(2,ice^{2ia+2ibx}\right)}{4b}-\frac{1}{6}ix^3\log\left(1-ice^{2ia+2ibx}\right)+\frac{1}{3}x$$

Antiderivative was successfully verified.

```
[In] Int[x^2*ArcCot[c + (1 - I*c)*Cot[a + b*x]],x]
```

```
[Out] -(b*x^4)/12 + (x^3*ArcCot[c + (1 - I*c)*Cot[a + b*x]])/3 - (I/6)*x^3*Log[1
- I*c*E^((2*I)*a + (2*I)*b*x)] - (x^2*PolyLog[2, I*c*E^((2*I)*a + (2*I)*b*x
)])/(4*b) - ((I/4)*x*PolyLog[3, I*c*E^((2*I)*a + (2*I)*b*x)])/b^2 + PolyLog
[4, I*c*E^((2*I)*a + (2*I)*b*x)]/(8*b^3)
```

Rule 2184

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x
_))))^(n_.)), x_Symbol] :> Simp[(c + d*x)^(m + 1)/(a*d*(m + 1)), x] - Dist[
b/a, Int[((c + d*x)^m*(F^(g*(e + f*x)))^n)/(a + b*(F^(g*(e + f*x)))^n), x],
 x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 5174

```
Int[ArcCot[(c_.) + Cot[(a_.) + (b_.)*(x_)]*(d_.)]*((e_.) + (f_.)*(x_))^(m_.
), x_Symbol] :> Simp[((e + f*x)^(m + 1)*ArcCot[c + d*Cot[a + b*x]])/(f*(m +
 1)), x] + Dist[(I*b)/(f*(m + 1)), Int[(e + f*x)^(m + 1)/(c - I*d - c*E^(2*
I*a + 2*I*b*x)), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && Eq
Q[(c - I*d)^2, -1]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6609

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[((e + f*x)^m*PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p])/(b*c*p*Log[F]), x] - Dist[(f*m)/(b*c*p*Log[F]), Int[(e + f*x)^
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
 d, e, f, n, p}, x] && GtQ[m, 0]
```

Rubi steps

$$\int x^2 \cot^{-1}(c+(1-ic)\cot(a+bx))\,dx = \frac{1}{3}x^3\cot^{-1}(c+(1-ic)\cot(a+bx)) + \frac{1}{3}(ib)\int \frac{x^3}{-i(1-ic)+c-ce^{2ia+2ibx}}\,d$$

$$= -\frac{bx^4}{12} + \frac{1}{3}x^3\cot^{-1}(c+(1-ic)\cot(a+bx)) - \frac{1}{3}(bc)\int \frac{e^{2ia+2ibx}x^3}{-i(1-ic)+c-ce}$$

$$= -\frac{bx^4}{12} + \frac{1}{3}x^3\cot^{-1}(c+(1-ic)\cot(a+bx)) - \frac{1}{6}ix^3\log\left(1-ice^{2ia+2ibx}\right) +$$

$$= -\frac{bx^4}{12} + \frac{1}{3}x^3\cot^{-1}(c+(1-ic)\cot(a+bx)) - \frac{1}{6}ix^3\log\left(1-ice^{2ia+2ibx}\right) -$$

$$= -\frac{bx^4}{12} + \frac{1}{3}x^3\cot^{-1}(c+(1-ic)\cot(a+bx)) - \frac{1}{6}ix^3\log\left(1-ice^{2ia+2ibx}\right) -$$

$$= -\frac{bx^4}{12} + \frac{1}{3}x^3\cot^{-1}(c+(1-ic)\cot(a+bx)) - \frac{1}{6}ix^3\log\left(1-ice^{2ia+2ibx}\right) -$$

$$= -\frac{bx^4}{12} + \frac{1}{3}x^3\cot^{-1}(c+(1-ic)\cot(a+bx)) - \frac{1}{6}ix^3\log\left(1-ice^{2ia+2ibx}\right) -$$

Mathematica [A] time = 0.23, size = 140, normalized size = 0.91

$$\frac{1}{3}x^3\cot^{-1}(c+(1-ic)\cot(a+bx)) - \frac{4ib^3x^3\log\left(1+\frac{ie^{-2i(a+bx)}}{c}\right) - 6b^2x^2\text{Li}_2\left(-\frac{ie^{-2i(a+bx)}}{c}\right) + 6ibx\text{Li}_3\left(-\frac{ie^{-2i(a+bx)}}{c}\right) + 3\text{Li}_4\left(-\right.}{24b^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*ArcCot[c + (1 - I*c)*Cot[a + b*x]],x]
```

```
[Out] (x^3*ArcCot[c + (1 - I*c)*Cot[a + b*x]])/3 - ((4*I)*b^3*x^3*Log[1 + I/(c*E^
((2*I)*(a + b*x)))] - 6*b^2*x^2*PolyLog[2, (-I)/(c*E^((2*I)*(a + b*x)))] +
(6*I)*b*x*PolyLog[3, (-I)/(c*E^((2*I)*(a + b*x)))] + 3*PolyLog[4, (-I)/(c*E
^((2*I)*(a + b*x)))])/(24*b^3)
```

fricas [C] time = 0.72, size = 174, normalized size = 1.13

$$-\frac{2\,b^4x^4 - 8\,\pi b^3x^3 - 4i\,b^3x^3\log\left(\frac{\left(ce^{(2i\,bx+2i\,a)}+i\right)e^{(-2i\,bx-2i\,a)}}{c+i}\right) + 6\,b^2x^2\mathrm{Li}_2\left(i\,ce^{(2i\,bx+2i\,a)}\right) - 2\,a^4 - 4i\,a^3\log\left(\frac{ce^{(2i\,bx+2i\,a)}+}{c}\right.}{24}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(pi-arccot(-c-(1-I*c)*cot(b*x+a))),x, algorithm="fricas")
```

```
[Out] -1/24*(2*b^4*x^4 - 8*pi*b^3*x^3 - 4*I*b^3*x^3*log((c*e^(2*I*b*x + 2*I*a) +
I)*e^(-2*I*b*x - 2*I*a)/(c + I)) + 6*b^2*x^2*dilog(I*c*e^(2*I*b*x + 2*I*a))
 - 2*a^4 - 4*I*a^3*log((c*e^(2*I*b*x + 2*I*a) + I)/c) + 6*I*b*x*polylog(3,
I*c*e^(2*I*b*x + 2*I*a)) - (-4*I*b^3*x^3 - 4*I*a^3)*log(-I*c*e^(2*I*b*x + 2
*I*a) + 1) - 3*polylog(4, I*c*e^(2*I*b*x + 2*I*a)))/b^3
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (\pi - \operatorname{arccot}(-(-i\,c + 1)\cot(bx + a) - c))x^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(pi-arccot(-c-(1-I*c)*cot(b*x+a))),x, algorithm="giac")
```

```
[Out] integrate((pi - arccot(-(-I*c + 1)*cot(b*x + a) - c))*x^2, x)
```

maple [C] time = 7.08, size = 1526, normalized size = 9.91

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(Pi-arccot(-c-(1-I*c)*cot(b*x+a))),x)
```

```
[Out] 1/12*x^3*Pi*csgn(I*(exp(2*I*(b*x+a))*c+I)/(exp(2*I*(b*x+a))-1))*csgn((exp(2
*I*(b*x+a))*c+I)/(exp(2*I*(b*x+a))-1))+1/3*I/b^3*ln(1-I*exp(2*I*(b*x+a))*c)
*a^3-1/12*b*x^4-1/12*x^3*Pi*csgn(I*exp(2*I*(b*x+a))*(I+c)/(exp(2*I*(b*x+a))
-1))*csgn(exp(2*I*(b*x+a))*(I+c)/(exp(2*I*(b*x+a))-1))+1/6*I*x^3*ln(exp(2*I
*(b*x+a))*c+I)-1/6*I*x^3*ln(I+c)-1/3*I*x^3*ln(exp(I*(b*x+a)))-1/12*x^3*Pi*c
sgn(I*exp(2*I*(b*x+a)))^3+1/4/b^3*polylog(2,I*c*exp(2*I*(b*x+a)))*a^2-1/2/b
^3*a^2*dilog(1-I*exp(I*(b*x+a))*(-I*c)^(1/2))-1/2/b^3*a^2*dilog(1+I*exp(I*(
b*x+a))*(-I*c)^(1/2))-1/2*I/b^2*a^2*ln(1-I*exp(I*(b*x+a))*(-I*c)^(1/2))*x-1
/2*I/b^2*a^2*ln(1+I*exp(I*(b*x+a))*(-I*c)^(1/2))*x-1/12*x^3*Pi*csgn((exp(2*
I*(b*x+a))*c+I)/(exp(2*I*(b*x+a))-1))^3-1/12*x^3*Pi*csgn(exp(2*I*(b*x+a))*(
I+c)/(exp(2*I*(b*x+a))-1))^3+1/6*x^3*Pi*csgn(I*exp(I*(b*x+a)))*csgn(I*exp(2
*I*(b*x+a)))^2-1/12*x^3*Pi*csgn(I*(I+c)/(exp(2*I*(b*x+a))-1))^3-1/12*x^3*Pi
*csgn(I*exp(2*I*(b*x+a))*(I+c)/(exp(2*I*(b*x+a))-1))^3+1/6*I/b^3*a^3*ln(exp
(2*I*(b*x+a))*c+I)-1/2*I/b^3*a^3*ln(1-I*exp(I*(b*x+a))*(-I*c)^(1/2))-1/2*I/
b^3*a^3*ln(1+I*exp(I*(b*x+a))*(-I*c)^(1/2))-1/4*I*x*polylog(3,I*c*exp(2*I*(
b*x+a)))/b^2+1/12*x^3*Pi*csgn(I*exp(2*I*(b*x+a))*(I+c)/(exp(2*I*(b*x+a))-1)
)*csgn(exp(2*I*(b*x+a))*(I+c)/(exp(2*I*(b*x+a))-1))^2+1/12*x^3*Pi*csgn(I*(I
+c))*csgn(I*(I+c)/(exp(2*I*(b*x+a))-1))^2+1/12*x^3*Pi*csgn(I/(exp(2*I*(b*x+
a))-1))*csgn(I*(I+c)/(exp(2*I*(b*x+a))-1))^2-1/12*x^3*Pi*csgn(I*(exp(2*I*(b
*x+a))*c+I))*csgn(I*(exp(2*I*(b*x+a))*c+I)/(exp(2*I*(b*x+a))-1))^2-1/12*x^3
*Pi*csgn(I/(exp(2*I*(b*x+a))-1))*csgn(I*(exp(2*I*(b*x+a))*c+I)/(exp(2*I*(b*
x+a))-1))^2-1/4*x^2*polylog(2,I*c*exp(2*I*(b*x+a)))/b+1/12*x^3*Pi*csgn(I*(e
xp(2*I*(b*x+a))*c+I)/(exp(2*I*(b*x+a))-1))^3+1/12*x^3*Pi*csgn(I*(exp(2*I*(b
*x+a))*c+I))*csgn(I/(exp(2*I*(b*x+a))-1))*csgn(I*(exp(2*I*(b*x+a))*c+I)/(ex
p(2*I*(b*x+a))-1))+1/12*x^3*Pi*csgn(exp(2*I*(b*x+a))*(I+c)/(exp(2*I*(b*x+a)
)-1))^2-1/12*x^3*Pi*csgn(I*exp(I*(b*x+a)))^2*csgn(I*exp(2*I*(b*x+a)))-1/12*
x^3*Pi*csgn(I*(I+c))*csgn(I/(exp(2*I*(b*x+a))-1))*csgn(I*(I+c)/(exp(2*I*(b*
```

```
x+a))-1))-1/12*x^3*Pi*csgn(I*exp(2*I*(b*x+a)))*csgn(I*(I+c)/(exp(2*I*(b*x+a
))-1))*csgn(I*exp(2*I*(b*x+a))*(I+c)/(exp(2*I*(b*x+a))-1))-1/6*I*x^3*ln(1-I
*exp(2*I*(b*x+a))*c)+1/2*I/b^2*ln(1-I*exp(2*I*(b*x+a))*c)*x*a^2+1/12*x^3*Pi
*csgn((exp(2*I*(b*x+a))*c+I)/(exp(2*I*(b*x+a))-1))^2-1/12*x^3*Pi*csgn(I*(ex
p(2*I*(b*x+a))*c+I)/(exp(2*I*(b*x+a))-1))*csgn((exp(2*I*(b*x+a))*c+I)/(exp(
2*I*(b*x+a))-1))^2+1/12*x^3*Pi*csgn(I*exp(2*I*(b*x+a)))*csgn(I*exp(2*I*(b*x
+a))*(I+c)/(exp(2*I*(b*x+a))-1))^2+1/12*x^3*Pi*csgn(I*(I+c)/(exp(2*I*(b*x+a
))-1))*csgn(I*exp(2*I*(b*x+a))*(I+c)/(exp(2*I*(b*x+a))-1))^2+1/8*polylog(4,
I*c*exp(2*I*(b*x+a)))/b^3
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(pi-arccot(-c-(1-I*c)*cot(b*x+a))),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(c-1>0)', see `assume?` for more det
ails)Is c-1 zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int x^2\,\left(\Pi+\mathrm{acot}\left(c-\cot\left(a+b\,x\right)\,\left(-1+c\,1\mathrm{i}\right)\right)\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(Pi + acot(c - cot(a + b*x)*(c*1i - 1))),x)
```

```
[Out] int(x^2*(Pi + acot(c - cot(a + b*x)*(c*1i - 1))), x)
```

sympy [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: CoercionFailed

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(pi-acot(-c-(1-I*c)*cot(b*x+a))),x)
```

```
[Out] Exception raised: CoercionFailed
```

3.176 $\int x \cot^{-1}(c + (1 - ic)\cot(a + bx))\, dx$

Optimal. Leaf size=123

$$-\frac{i\text{Li}_3\left(ice^{2ia+2ibx}\right)}{8b^2}-\frac{x\text{Li}_2\left(ice^{2ia+2ibx}\right)}{4b}-\frac{1}{4}ix^2\log\left(1-ice^{2ia+2ibx}\right)+\frac{1}{2}x^2\cot^{-1}(c+(1-ic)\cot(a+bx))-\frac{bx^3}{6}$$

```
[Out] -1/6*b*x^3+1/2*x^2*(Pi-arccot(-c-(1-I*c)*cot(b*x+a)))-1/4*I*x^2*ln(1-I*c*ex
p(2*I*a+2*I*b*x))-1/4*x*polylog(2,I*c*exp(2*I*a+2*I*b*x))/b-1/8*I*polylog(3
,I*c*exp(2*I*a+2*I*b*x))/b^2
```

Rubi [A] time = 0.22, antiderivative size = 123, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.316$, Rules used = {5174, 2184, 2190, 2531, 2282, 6589}

$$-\frac{i\text{PolyLog}\left(3,ice^{2ia+2ibx}\right)}{8b^2}-\frac{x\text{PolyLog}\left(2,ice^{2ia+2ibx}\right)}{4b}-\frac{1}{4}ix^2\log\left(1-ice^{2ia+2ibx}\right)+\frac{1}{2}x^2\cot^{-1}(c+(1-ic)\cot(a+bx)$$

Antiderivative was successfully verified.

```
[In] Int[x*ArcCot[c + (1 - I*c)*Cot[a + b*x]],x]
```

```
[Out] -(b*x^3)/6 + (x^2*ArcCot[c + (1 - I*c)*Cot[a + b*x]])/2 - (I/4)*x^2*Log[1 -
 I*c*E^((2*I)*a + (2*I)*b*x)] - (x*PolyLog[2, I*c*E^((2*I)*a + (2*I)*b*x)])
/(4*b) - ((I/8)*PolyLog[3, I*c*E^((2*I)*a + (2*I)*b*x)])/b^2
```

Rule 2184

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x
_))))^(n_.)), x_Symbol] :> Simp[(c + d*x)^(m + 1)/(a*d*(m + 1)), x] - Dist[
b/a, Int[((c + d*x)^m*(F^(g*(e + f*x)))^n)/(a + b*(F^(g*(e + f*x)))^n), x],
 x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 5174

```
Int[ArcCot[(c_.) + Cot[(a_.) + (b_.)*(x_)]*(d_.)]*((e_.) + (f_.)*(x_))^(m_.
), x_Symbol] :> Simp[((e + f*x)^(m + 1)*ArcCot[c + d*Cot[a + b*x]])/(f*(m +
```

```
1)), x] + Dist[(I*b)/(f*(m + 1)), Int[(e + f*x)^(m + 1)/(c - I*d - c*E^(2*
I*a + 2*I*b*x)), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && Eq
Q[(c - I*d)^2, -1]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int x\cot^{-1}(c+(1-ic)\cot(a+bx))\,dx=\frac{1}{2}x^2\cot^{-1}(c+(1-ic)\cot(a+bx))+\frac{1}{2}(ib)\int\frac{x^2}{-i(1-ic)+c-ce^{2ia+2ibx}}\,dx$$
$$=-\frac{bx^3}{6}+\frac{1}{2}x^2\cot^{-1}(c+(1-ic)\cot(a+bx))-\frac{1}{2}(bc)\int\frac{e^{2ia+2ibx}x^2}{-i(1-ic)+c-ce^{2}}$$
$$=-\frac{bx^3}{6}+\frac{1}{2}x^2\cot^{-1}(c+(1-ic)\cot(a+bx))-\frac{1}{4}ix^2\log\left(1-ice^{2ia+2ibx}\right)+\frac{1}{2}$$
$$=-\frac{bx^3}{6}+\frac{1}{2}x^2\cot^{-1}(c+(1-ic)\cot(a+bx))-\frac{1}{4}ix^2\log\left(1-ice^{2ia+2ibx}\right)-$$
$$=-\frac{bx^3}{6}+\frac{1}{2}x^2\cot^{-1}(c+(1-ic)\cot(a+bx))-\frac{1}{4}ix^2\log\left(1-ice^{2ia+2ibx}\right)-$$
$$=-\frac{bx^3}{6}+\frac{1}{2}x^2\cot^{-1}(c+(1-ic)\cot(a+bx))-\frac{1}{4}ix^2\log\left(1-ice^{2ia+2ibx}\right)-$$

Mathematica [A] time = 0.11, size = 110, normalized size = 0.89

$$\frac{1}{2}x^2\cot^{-1}(c+(1-ic)\cot(a+bx))-\frac{i\left(2b^2x^2\log\left(1+\frac{ie^{-2i(a+bx)}}{c}\right)+2ibx\text{Li}_2\left(-\frac{ie^{-2i(a+bx)}}{c}\right)+\text{Li}_3\left(-\frac{ie^{-2i(a+bx)}}{c}\right)\right)}{8b^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[x*ArcCot[c + (1 - I*c)*Cot[a + b*x]],x]
```

```
[Out] (x^2*ArcCot[c + (1 - I*c)*Cot[a + b*x]])/2 - ((I/8)*(2*b^2*x^2*Log[1 + I/(c
*E^((2*I)*(a + b*x)))] + (2*I)*b*x*PolyLog[2, (-I)/(c*E^((2*I)*(a + b*x)))]
 + PolyLog[3, (-I)/(c*E^((2*I)*(a + b*x)))]))/b^2
```

fricas [C] time = 0.43, size = 152, normalized size = 1.24

$$-\frac{4\,b^3x^3-12\,\pi b^2x^2-6i\,b^2x^2\log\left(\frac{\left(ce^{(2i\,bx+2i\,a)}+i\right)e^{(-2i\,bx-2i\,a)}}{c+i}\right)+4\,a^3+6\,bx\text{Li}_2\left(i\,ce^{(2i\,bx+2i\,a)}\right)+6i\,a^2\log\left(\frac{ce^{(2i\,bx+2i\,a)}+i}{c}\right)-}{24\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(pi-arccot(-c-(1-I*c)*cot(b*x+a))),x, algorithm="fricas")
```

```
[Out] -1/24*(4*b^3*x^3 - 12*pi*b^2*x^2 - 6*I*b^2*x^2*log((c*e^(2*I*b*x + 2*I*a) +
 I)*e^(-2*I*b*x - 2*I*a)/(c + I)) + 4*a^3 + 6*b*x*dilog(I*c*e^(2*I*b*x + 2*
I*a)) + 6*I*a^2*log((c*e^(2*I*b*x + 2*I*a) + I)/c) - (-6*I*b^2*x^2 + 6*I*a^
2)*log(-I*c*e^(2*I*b*x + 2*I*a) + 1) + 3*I*polylog(3, I*c*e^(2*I*b*x + 2*I*
a)))/b^2
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (\pi - \operatorname{arccot}(-(-ic+1)\cot(bx+a)-c))x\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(pi-arccot(-c-(1-I*c)*cot(b*x+a))),x, algorithm="giac")
[Out] integrate((pi - arccot(-(-I*c + 1)*cot(b*x + a) - c))*x, x)
```

maple [C] time = 6.12, size = 1491, normalized size = 12.12

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(Pi-arccot(-c-(1-I*c)*cot(b*x+a))),x)
[Out] -1/4*x*polylog(2,I*c*exp(2*I*(b*x+a)))/b-1/8*I*polylog(3,I*c*exp(2*I*(b*x+a
)))/b^2-1/4/b^2*polylog(2,I*c*exp(2*I*(b*x+a)))*a+1/2/b^2*a*dilog(1-I*exp(I
*(b*x+a))*(-I*c)^(1/2))+1/2/b^2*a*dilog(1+I*exp(I*(b*x+a))*(-I*c)^(1/2))-1/
8*x^2*Pi*csgn(I*exp(2*I*(b*x+a))*(I+c)/(exp(2*I*(b*x+a))-1))^3-1/4*I*x^2*ln
(I+c)+1/8*x^2*Pi*csgn(I*exp(2*I*(b*x+a))*(I+c)/(exp(2*I*(b*x+a))-1))*csgn(e
xp(2*I*(b*x+a))*(I+c)/(exp(2*I*(b*x+a))-1))^2-1/8*x^2*Pi*csgn(I*(exp(2*I*(b
*x+a))*c+I))*csgn(I*(exp(2*I*(b*x+a))*c+I)/(exp(2*I*(b*x+a))-1))^2-1/8*x^2*
Pi*csgn(I/(exp(2*I*(b*x+a))-1))*csgn(I*(exp(2*I*(b*x+a))*c+I)/(exp(2*I*(b*x
+a))-1))^2-1/8*x^2*Pi*csgn(exp(2*I*(b*x+a))*(I+c)/(exp(2*I*(b*x+a))-1))^3+1
/8*x^2*Pi*csgn((exp(2*I*(b*x+a))*c+I)/(exp(2*I*(b*x+a))-1))^2+1/4*I*x^2*ln(
exp(2*I*(b*x+a))*c+I)-1/4*I/b^2*ln(1-I*exp(2*I*(b*x+a))*c)*a^2-1/4*I/b^2*a^
2*ln(exp(2*I*(b*x+a))*c+I)+1/2*I/b^2*a^2*ln(1-I*exp(I*(b*x+a))*(-I*c)^(1/2)
)+1/2*I/b^2*a^2*ln(1+I*exp(I*(b*x+a))*(-I*c)^(1/2))+1/2*I/b*a*ln(1+I*exp(I*
(b*x+a))*(-I*c)^(1/2))*x-1/2*I*x^2*ln(exp(I*(b*x+a)))+1/8*x^2*Pi*csgn(I*(ex
p(2*I*(b*x+a))*c+I))*csgn(I/(exp(2*I*(b*x+a))-1))*csgn(I*(exp(2*I*(b*x+a))*
c+I)/(exp(2*I*(b*x+a))-1))-1/8*x^2*Pi*csgn(I*(I+c))*csgn(I/(exp(2*I*(b*x+a)
)-1))*csgn(I*(I+c)/(exp(2*I*(b*x+a))-1))-1/4*I*x^2*ln(1-I*exp(2*I*(b*x+a))*
c)-1/8*x^2*Pi*csgn(I*(exp(2*I*(b*x+a))*c+I)/(exp(2*I*(b*x+a))-1))*csgn((exp
(2*I*(b*x+a))*c+I)/(exp(2*I*(b*x+a))-1))^2-1/8*x^2*Pi*csgn(I*exp(2*I*(b*x+a
))*(I+c)/(exp(2*I*(b*x+a))-1))*csgn(exp(2*I*(b*x+a))*(I+c)/(exp(2*I*(b*x+a)
)-1))-1/8*x^2*Pi*csgn(I*exp(I*(b*x+a)))^2*csgn(I*exp(2*I*(b*x+a)))+1/4*x^2*
Pi*csgn(I*exp(I*(b*x+a)))*csgn(I*exp(2*I*(b*x+a)))^2+1/2*I/b*a*ln(1-I*exp(I
*(b*x+a))*(-I*c)^(1/2))*x-1/2*I/b*ln(1-I*exp(2*I*(b*x+a))*c)*x*a+1/8*x^2*Pi
*csgn(I*(exp(2*I*(b*x+a))*c+I)/(exp(2*I*(b*x+a))-1))^3-1/8*x^2*Pi*csgn(I*ex
p(2*I*(b*x+a)))^3+1/8*x^2*Pi*csgn(I*exp(2*I*(b*x+a)))*csgn(I*exp(2*I*(b*x+a
))*(I+c)/(exp(2*I*(b*x+a))-1))^2+1/8*x^2*Pi*csgn(I*(I+c)/(exp(2*I*(b*x+a))-
1))*csgn(I*exp(2*I*(b*x+a))*(I+c)/(exp(2*I*(b*x+a))-1))^2-1/8*x^2*Pi*csgn((
exp(2*I*(b*x+a))*c+I)/(exp(2*I*(b*x+a))-1))^3-1/6*b*x^3+1/8*x^2*Pi*csgn(I*(
exp(2*I*(b*x+a))*c+I)/(exp(2*I*(b*x+a))-1))*csgn((exp(2*I*(b*x+a))*c+I)/(ex
p(2*I*(b*x+a))-1))-1/8*x^2*Pi*csgn(I*(I+c)/(exp(2*I*(b*x+a))-1))^3+1/8*x^2*
Pi*csgn(I*(I+c))*csgn(I*(I+c)/(exp(2*I*(b*x+a))-1))^2+1/8*x^2*Pi*csgn(I/(ex
p(2*I*(b*x+a))-1))*csgn(I*(I+c)/(exp(2*I*(b*x+a))-1))^2+1/8*x^2*Pi*csgn(exp
(2*I*(b*x+a))*(I+c)/(exp(2*I*(b*x+a))-1))^2-1/8*x^2*Pi*csgn(I*exp(2*I*(b*x+
a)))*csgn(I*(I+c)/(exp(2*I*(b*x+a))-1))*csgn(I*exp(2*I*(b*x+a))*(I+c)/(exp(
2*I*(b*x+a))-1))
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(pi-arccot(-c-(1-I*c)*cot(b*x+a))),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(c-1>0)', see `assume?` for more det
ails)Is c-1 zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int x\ (\Pi + \operatorname{acot}(c - \cot(a + b\,x)\ (-1 + c\,1\mathrm{i})))\ dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(Pi + acot(c - cot(a + b*x)*(c*1i - 1))),x)
```

```
[Out] int(x*(Pi + acot(c - cot(a + b*x)*(c*1i - 1))), x)
```

sympy [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: CoercionFailed

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(pi-acot(-c-(1-I*c)*cot(b*x+a))),x)
```

```
[Out] Exception raised: CoercionFailed
```

3.177 $\int \cot^{-1}(c+(1-ic)\cot(a+bx))\,dx$

Optimal. Leaf size=85

$$-\frac{\text{Li}_2\left(ice^{2ia+2ibx}\right)}{4b}-\frac{1}{2}ix\log\left(1-ice^{2ia+2ibx}\right)+x\cot^{-1}(c+(1-ic)\cot(a+bx))-\frac{bx^2}{2}$$

```
[Out] -1/2*b*x^2+x*(Pi-arccot(-c-(1-I*c)*cot(b*x+a)))-1/2*I*x*ln(1-I*c*exp(2*I*a+
2*I*b*x))-1/4*polylog(2,I*c*exp(2*I*a+2*I*b*x))/b
```

Rubi [A] time = 0.14, antiderivative size = 85, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.294, Rules used = {5166, 2184, 2190, 2279, 2391}

$$-\frac{\text{PolyLog}\left(2,ice^{2ia+2ibx}\right)}{4b}-\frac{1}{2}ix\log\left(1-ice^{2ia+2ibx}\right)+x\cot^{-1}(c+(1-ic)\cot(a+bx))-\frac{bx^2}{2}$$

Antiderivative was successfully verified.

```
[In] Int[ArcCot[c + (1 - I*c)*Cot[a + b*x]],x]
```

```
[Out] -(b*x^2)/2 + x*ArcCot[c + (1 - I*c)*Cot[a + b*x]] - (I/2)*x*Log[1 - I*c*E^(
(2*I)*a + (2*I)*b*x)] - PolyLog[2, I*c*E^((2*I)*a + (2*I)*b*x)]/(4*b)
```

Rule 2184

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x
_))))^(n_.)), x_Symbol] :> Simp[(c + d*x)^(m + 1)/(a*d*(m + 1)), x] - Dist[
b/a, Int[((c + d*x)^m*(F^(g*(e + f*x)))^n)/(a + b*(F^(g*(e + f*x)))^n), x],
 x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 5166

```
Int[ArcCot[(c_.) + Cot[(a_.) + (b_.)*(x_)]*(d_.)], x_Symbol] :> Simp[x*ArcC
ot[c + d*Cot[a + b*x]], x] + Dist[I*b, Int[x/(c - I*d - c*E^(2*I*a + 2*I*b*
x)), x], x] /; FreeQ[{a, b, c, d}, x] && EqQ[(c - I*d)^2, -1]
```

Rubi steps

$$\int \cot^{-1}(c+(1-ic)\cot(a+bx))\,dx = x\cot^{-1}(c+(1-ic)\cot(a+bx)) + (ib)\int \frac{x}{-i(1-ic)+c-ce^{2ia+2ibx}}\,dx$$
$$= -\frac{bx^2}{2} + x\cot^{-1}(c+(1-ic)\cot(a+bx)) - (bc)\int \frac{e^{2ia+2ibx}x}{-i(1-ic)+c-ce^{2ia+2ibx}}$$
$$= -\frac{bx^2}{2} + x\cot^{-1}(c+(1-ic)\cot(a+bx)) - \frac{1}{2}ix\log\left(1-ice^{2ia+2ibx}\right) + \frac{1}{2}i\int 1$$

Subst

$$= -\frac{bx^2}{2} + x\cot^{-1}(c+(1-ic)\cot(a+bx)) - \frac{1}{2}ix\log\left(1-ice^{2ia+2ibx}\right) +$$
$$= -\frac{bx^2}{2} + x\cot^{-1}(c+(1-ic)\cot(a+bx)) - \frac{1}{2}ix\log\left(1-ice^{2ia+2ibx}\right) - \frac{\mathrm{Li}_2\left(ic\right.}{}$$

Mathematica [B] time = 6.88, size = 929, normalized size = 10.93

$$\frac{}{(\cot(a+bx)+i)(ic+(c+i)\cot(a+bx)+1)\left(i\log(i\tan(bx)+1)\tan(bx)\cos^2(a)+2ibx+\log\left(1-\frac{\sec(bx)((c-i)\cos(}{}\right.\right.}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[ArcCot[c + (1 - I*c)*Cot[a + b*x]],x]
```

```
[Out] x*ArcCot[c + (1 - I*c)*Cot[a + b*x]] + (I*x*Csc[a + b*x]^2*(2*b*x*Log[2*Cos
[b*x]*(Cos[b*x] - I*Sin[b*x])] + I*Log[(Sec[b*x]*(Cos[a] - I*Sin[a])*((I +
c)*Cos[a + b*x] + (1 + I*c)*Sin[a + b*x]))/(2*c)]*Log[1 - I*Tan[b*x]] - I*L
og[(Sec[b*x]*((1 - I*c)*Cos[a + b*x] + (-I + c)*Sin[a + b*x]))/(2*Cos[a] -
(2*I)*Sin[a])]*Log[1 + I*Tan[b*x]] + I*PolyLog[2, -Cos[2*b*x] + I*Sin[2*b*x
]] + I*PolyLog[2, (Sec[b*x]*((-I + c)*Cos[a] + I*(I + c)*Sin[a])*(Cos[a + b
*x] - I*Sin[a + b*x]))/(2*c)] - I*PolyLog[2, (Sec[b*x]*((1 + I*c)*Cos[a] -
(I + c)*Sin[a])*(Cos[a + b*x] + I*Sin[a + b*x]))/2])*(Cos[b*x] - I*Sin[b*x]
)*(Cos[b*x] + I*Sin[b*x]))/((I + Cot[a + b*x])*(1 + I*c + (I + c)*Cot[a + b
*x])*((2*I)*b*x + Log[1 - (Sec[b*x]*((-I + c)*Cos[a] + I*(I + c)*Sin[a])*(C
os[a + b*x] - I*Sin[a + b*x]))/(2*c)] + Log[1 + (Sec[b*x]*((-1 - I*c)*Cos[a
] + (I + c)*Sin[a])*(Cos[a + b*x] + I*Sin[a + b*x]))/2] + ((-I + c)*Cos[a +
 b*x]*(Log[1 - I*Tan[b*x]] - Log[1 + I*Tan[b*x]]))/((I + c)*Cos[a + b*x] +
(1 + I*c)*Sin[a + b*x]) + ((I + c)*(Log[1 - I*Tan[b*x]] - Log[1 + I*Tan[b*x
]])*Sin[a + b*x])/((1 - I*c)*Cos[a + b*x] + (-I + c)*Sin[a + b*x]) + 2*b*x*
Tan[b*x] + I*Log[1 - (Sec[b*x]*((-I + c)*Cos[a] + I*(I + c)*Sin[a])*(Cos[a
+ b*x] - I*Sin[a + b*x]))/(2*c)]*Tan[b*x] - I*Log[1 + (Sec[b*x]*((-1 - I*c)
*Cos[a] + (I + c)*Sin[a])*(Cos[a + b*x] + I*Sin[a + b*x]))/2]*Tan[b*x] - I*
Log[1 - I*Tan[b*x]]*Tan[b*x] + I*Cos[a]^2*Log[1 + I*Tan[b*x]]*Tan[b*x] + I*
Log[1 + I*Tan[b*x]]*Sin[a]^2*Tan[b*x] + (I*Log[(Sec[b*x]*((1 - I*c)*Cos[a +
 b*x] + (-I + c)*Sin[a + b*x]))/(2*Cos[a] - (2*I)*Sin[a])]*Sec[b*x]^2)/(-I
+ Tan[b*x]) - (I*Log[(Sec[b*x]*(Cos[a] - I*Sin[a])*((I + c)*Cos[a + b*x] +
(1 + I*c)*Sin[a + b*x]))/(2*c)]*Sec[b*x]^2)/(I + Tan[b*x])))
```

fricas [A] time = 0.41, size = 116, normalized size = 1.36

$$-\frac{2\,b^2x^2 - 4\,\pi bx - 2i\,bx\log\left(\frac{\left(ce^{(2i\,bx+2i\,a)}+i\right)e^{(-2i\,bx-2i\,a)}}{c+i}\right) - 2\,a^2 - (-2i\,bx-2i\,a)\log\left(-i\,ce^{(2i\,bx+2i\,a)}+1\right) - 2i\,a\log\left(\frac{ce^{(2i}}{}\right.}{4\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(pi-arccot(-c-(1-I*c)*cot(b*x+a)),x, algorithm="fricas")
```

```
[Out] -1/4*(2*b^2*x^2 - 4*pi*b*x - 2*I*b*x*log((c*e^(2*I*b*x + 2*I*a) + I)*e^(-2*
I*b*x - 2*I*a)/(c + I)) - 2*a^2 - (-2*I*b*x - 2*I*a)*log(-I*c*e^(2*I*b*x +
2*I*a) + 1) - 2*I*a*log((c*e^(2*I*b*x + 2*I*a) + I)/c) + dilog(I*c*e^(2*I*b
*x + 2*I*a)))/b
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \pi - \operatorname{arccot}\left(-(-i\,c+1)\cot\left(bx+a\right)-c\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(pi-arccot(-c-(1-I*c)*cot(b*x+a)),x, algorithm="giac")
```

```
[Out] integrate(pi - arccot(-(-I*c + 1)*cot(b*x + a) - c), x)
```

maple [B] time = 0.75, size = 1498, normalized size = 17.62

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(Pi-arccot(-c-(1-I*c)*cot(b*x+a)),x)
```

```
[Out] -1/4*I/b/(-1+I*c)/(I+c)*ln(I+cot(b*x+a)*(-1+I*c)+c)*ln(-1/2*(I+cot(b*x+a)*(
-1+I*c)-c)/c)+1/4*I/b/(-1+I*c)/(I+c)*ln(I+cot(b*x+a)*(-1+I*c)+c)*ln((cot(b*
x+a)*(-1+I*c)-c-I)/(-2*I-2*c))-1/2/b/(-1+I*c)/(I+c)*ln(I+cot(b*x+a)*(-1+I*c
)+c)*ln(-1/2*(I+cot(b*x+a)*(-1+I*c)-c)/c)*c+1/2/b/(-1+I*c)/(I+c)*ln(I+cot(b
*x+a)*(-1+I*c)+c)*ln((cot(b*x+a)*(-1+I*c)-c-I)/(-2*I-2*c))*c+1/2/b/(-1+I*c)
/(I+c)*ln(cot(b*x+a)*(-1+I*c)-c-I)*ln(-1/2*I*(I+cot(b*x+a)*(-1+I*c)-c))*c+1
/b/(-1+I*c)*arccot(cot(b*x+a)*(-1+I*c)-c)/(2*I+2*c)*ln(I+cot(b*x+a)*(-1+I*c
)+c)*c^2-1/b/(-1+I*c)*arccot(cot(b*x+a)*(-1+I*c)-c)/(2*I+2*c)*ln(cot(b*x+a)
*(-1+I*c)-c-I)*c^2-1/4*I/b/(-1+I*c)/(I+c)*ln(cot(b*x+a)*(-1+I*c)-c-I)*ln(-1
/2*I*(I+cot(b*x+a)*(-1+I*c)-c))*c^2+1/4*I/b/(-1+I*c)/(I+c)*ln(I+cot(b*x+a)*
(-1+I*c)+c)*ln(-1/2*(I+cot(b*x+a)*(-1+I*c)-c)/c)*c^2-1/4*I/b/(-1+I*c)/(I+c)
*ln(I+cot(b*x+a)*(-1+I*c)+c)*ln((cot(b*x+a)*(-1+I*c)-c-I)/(-2*I-2*c))*c^2+2
*I/b/(-1+I*c)*arccot(cot(b*x+a)*(-1+I*c)-c)/(2*I+2*c)*ln(I+cot(b*x+a)*(-1+I
*c)+c)*c-2*I/b/(-1+I*c)*arccot(cot(b*x+a)*(-1+I*c)-c)/(2*I+2*c)*ln(cot(b*x+
a)*(-1+I*c)-c-I)*c+1/2/b/(-1+I*c)/(I+c)*dilog((cot(b*x+a)*(-1+I*c)-c-I)/(-2
*I-2*c))*c+1/2/b/(-1+I*c)/(I+c)*dilog(-1/2*I*(I+cot(b*x+a)*(-1+I*c)-c))*c-1
/4/b/(-1+I*c)/(I+c)*ln(cot(b*x+a)*(-1+I*c)-c-I)^2*c-1/b/(-1+I*c)*arccot(cot
(b*x+a)*(-1+I*c)-c)/(2*I+2*c)*ln(I+cot(b*x+a)*(-1+I*c)+c)+1/b/(-1+I*c)*arcc
ot(cot(b*x+a)*(-1+I*c)-c)/(2*I+2*c)*ln(cot(b*x+a)*(-1+I*c)-c-I)-1/4*I/b/(-1
+I*c)/(I+c)*dilog(-1/2*(I+cot(b*x+a)*(-1+I*c)-c)/c)+1/4*I/b/(-1+I*c)/(I+c)*
dilog((cot(b*x+a)*(-1+I*c)-c-I)/(-2*I-2*c))+1/4*I/b/(-1+I*c)/(I+c)*dilog(-1
/2*I*(I+cot(b*x+a)*(-1+I*c)-c))-1/8*I/b/(-1+I*c)/(I+c)*ln(cot(b*x+a)*(-1+I*
c)-c-I)^2-1/2/b/(-1+I*c)/(I+c)*dilog(-1/2*(I+cot(b*x+a)*(-1+I*c)-c)/c)*c+Pi
*x-1/4*I/b/(-1+I*c)/(I+c)*dilog(-1/2*I*(I+cot(b*x+a)*(-1+I*c)-c))*c^2+1/8*I
/b/(-1+I*c)/(I+c)*ln(cot(b*x+a)*(-1+I*c)-c-I)^2*c^2+1/4*I/b/(-1+I*c)/(I+c)*
dilog(-1/2*(I+cot(b*x+a)*(-1+I*c)-c)/c)*c^2-1/4*I/b/(-1+I*c)/(I+c)*dilog((c
ot(b*x+a)*(-1+I*c)-c-I)/(-2*I-2*c))*c^2+1/4*I/b/(-1+I*c)/(I+c)*ln(cot(b*x+a
)*(-1+I*c)-c-I)*ln(-1/2*I*(I+cot(b*x+a)*(-1+I*c)-c))
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(pi-arccot(-c-(1-I*c)*cot(b*x+a)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
```

```
elp (example of legal syntax is 'assume(c-1>0)', see `assume?` for more det
ails)Is c-1 zero or nonzero?
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.01

$$\int \Pi + \operatorname{acot}\left(c - \cot\left(a + b\,x\right)\,\left(-1 + c\,1\mathrm{i}\right)\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(Pi + acot(c - cot(a + b*x)*(c*1i - 1)),x)
[Out] int(Pi + acot(c - cot(a + b*x)*(c*1i - 1)), x)
```

sympy **[F(-2)]** time = 0.00, size = 0, normalized size = 0.00

Exception raised: CoercionFailed

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(pi-acot(-c-(1-I*c)*cot(b*x+a)),x)
[Out] Exception raised: CoercionFailed
```

3.178 $\int \frac{\cot^{-1}(c+(1-ic)\cot(a+bx))}{x}\,dx$

Optimal. Leaf size=24

$$\text{Int}\left(\frac{\cot^{-1}(c+(1-ic)\cot(a+bx))}{x},x\right)$$

```
[Out] CannotIntegrate((Pi-arccot(-c-(1-I*c)*cot(b*x+a)))/x,x)
```

Rubi [A] time = 0.11, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\cot^{-1}(c+(1-ic)\cot(a+bx))}{x}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[ArcCot[c + (1 - I*c)*Cot[a + b*x]]/x,x]
[Out] Defer[Int][ArcCot[c + (1 - I*c)*Cot[a + b*x]]/x, x]
```

Rubi steps

$$\int \frac{\cot^{-1}(c+(1-ic)\cot(a+bx))}{x}\,dx=\int \frac{\cot^{-1}(c+(1-ic)\cot(a+bx))}{x}\,dx$$

Mathematica [A] time = 0.41, size = 0, normalized size = 0.00

$$\int \frac{\cot^{-1}(c+(1-ic)\cot(a+bx))}{x}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[ArcCot[c + (1 - I*c)*Cot[a + b*x]]/x,x]
[Out] Integrate[ArcCot[c + (1 - I*c)*Cot[a + b*x]]/x, x]
```

fricas [A] time = 0.53, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{2\pi+i\log\left(\frac{\left(ce^{(2ibx+2ia)}+i\right)e^{(-2ibx-2ia)}}{c+i}\right)}{2x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((pi-arccot(-c-(1-I*c)*cot(b*x+a)))/x,x, algorithm="fricas")
[Out] integral(1/2*(2*pi + I*log((c*e^(2*I*b*x + 2*I*a) + I)*e^(-2*I*b*x - 2*I*a)
/(c + I)))/x, x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\pi-\operatorname{arccot}\left(-(-ic+1)\cot(bx+a)-c\right)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((pi-arccot(-c-(1-I*c)*cot(b*x+a)))/x,x, algorithm="giac")
```

```
[Out] integrate((pi - arccot(-(-I*c + 1)*cot(b*x + a) - c))/x, x)
```

maple [A] time = 2.07, size = 0, normalized size = 0.00

$$\int \frac{\pi - \operatorname{arccot}\left(-c - (-ic + 1)\cot\left(bx + a\right)\right)}{x}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((Pi-arccot(-c-(1-I*c)*cot(b*x+a)))/x,x)
```

```
[Out] int((Pi-arccot(-c-(1-I*c)*cot(b*x+a)))/x,x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((pi-arccot(-c-(1-I*c)*cot(b*x+a)))/x,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(c-1>0)', see `assume?` for more det
ails)Is c-1 zero or nonzero?
```

mupad [A] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{\Pi + \mathrm{acot}\left(c - \cot\left(a + b\,x\right)\,\left(-1 + c\,1\mathrm{i}\right)\right)}{x}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((Pi + acot(c - cot(a + b*x)*(c*1i - 1)))/x,x)
```

```
[Out] int((Pi + acot(c - cot(a + b*x)*(c*1i - 1)))/x, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((pi-acot(-c-(1-I*c)*cot(b*x+a)))/x,x)
```

```
[Out] Timed out
```

3.179 $\int x^2 \cot^{-1}(c-(1+ic)\cot(a+bx))\,dx$

Optimal. Leaf size=155

$$-\frac{\text{Li}_4\left(-ice^{2ia+2ibx}\right)}{8b^3}+\frac{ix\text{Li}_3\left(-ice^{2ia+2ibx}\right)}{4b^2}+\frac{x^2\text{Li}_2\left(-ice^{2ia+2ibx}\right)}{4b}+\frac{1}{6}ix^3\log\left(1+ice^{2ia+2ibx}\right)+\frac{1}{3}x^3\cot^{-1}(c-(1+ic)\text{cc}$$

```
[Out] 1/12*b*x^4+1/3*x^3*(Pi-arccot(-c+(1+I*c)*cot(b*x+a)))+1/6*I*x^3*ln(1+I*c*ex
p(2*I*a+2*I*b*x))+1/4*x^2*polylog(2,-I*c*exp(2*I*a+2*I*b*x))/b+1/4*I*x*poly
log(3,-I*c*exp(2*I*a+2*I*b*x))/b^2-1/8*polylog(4,-I*c*exp(2*I*a+2*I*b*x))/b
^3
```

Rubi [A] time = 0.26, antiderivative size = 155, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 7, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.318$, Rules used = {5174, 2184, 2190, 2531, 6609, 2282, 6589}

$$\frac{ix\text{PolyLog}\left(3,-ice^{2ia+2ibx}\right)}{4b^2}-\frac{\text{PolyLog}\left(4,-ice^{2ia+2ibx}\right)}{8b^3}+\frac{x^2\text{PolyLog}\left(2,-ice^{2ia+2ibx}\right)}{4b}+\frac{1}{6}ix^3\log\left(1+ice^{2ia+2ibx}\right)+$$

Antiderivative was successfully verified.

```
[In] Int[x^2*ArcCot[c - (1 + I*c)*Cot[a + b*x]],x]
```

```
[Out] (b*x^4)/12 + (x^3*ArcCot[c - (1 + I*c)*Cot[a + b*x]])/3 + (I/6)*x^3*Log[1 +
 I*c*E^((2*I)*a + (2*I)*b*x)] + (x^2*PolyLog[2, (-I)*c*E^((2*I)*a + (2*I)*b
*x)])/(4*b) + ((I/4)*x*PolyLog[3, (-I)*c*E^((2*I)*a + (2*I)*b*x)])/b^2 - Po
lyLog[4, (-I)*c*E^((2*I)*a + (2*I)*b*x)]/(8*b^3)
```

Rule 2184

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x
_))))^(n_.)), x_Symbol] :> Simp[(c + d*x)^(m + 1)/(a*d*(m + 1)), x] - Dist[
b/a, Int[((c + d*x)^m*(F^(g*(e + f*x)))^n)/(a + b*(F^(g*(e + f*x)))^n), x],
 x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 5174

```
Int[ArcCot[(c_.) + Cot[(a_.) + (b_.)*(x_)]*(d_.)]*((e_.) + (f_.)*(x_))^(m_.
), x_Symbol] :> Simp[((e + f*x)^(m + 1)*ArcCot[c + d*Cot[a + b*x]])/(f*(m +
 1)), x] + Dist[(I*b)/(f*(m + 1)), Int[(e + f*x)^(m + 1)/(c - I*d - c*E^(2*
I*a + 2*I*b*x)), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && Eq
Q[(c - I*d)^2, -1]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6609

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[((e + f*x)^m*PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p])/(b*c*p*Log[F]), x] - Dist[(f*m)/(b*c*p*Log[F]), Int[(e + f*x)^
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
 d, e, f, n, p}, x] && GtQ[m, 0]
```

Rubi steps

$$
\begin{aligned}
\int x^2 \cot^{-1}(c-(1+ic)\cot(a+bx))\,dx &= \frac{1}{3}x^3\cot^{-1}(c-(1+ic)\cot(a+bx))+\frac{1}{3}(ib)\int \frac{x^3}{-i(-1-ic)+c-ce^{2ia+2ibx}} \\
&= \frac{bx^4}{12}+\frac{1}{3}x^3\cot^{-1}(c-(1+ic)\cot(a+bx))+\frac{1}{3}(bc)\int \frac{e^{2ia+2ibx}x^3}{-i(-1-ic)+c-ce} \\
&= \frac{bx^4}{12}+\frac{1}{3}x^3\cot^{-1}(c-(1+ic)\cot(a+bx))+\frac{1}{6}ix^3\log\left(1+ice^{2ia+2ibx}\right)-\frac{1}{2} \\
&= \frac{bx^4}{12}+\frac{1}{3}x^3\cot^{-1}(c-(1+ic)\cot(a+bx))+\frac{1}{6}ix^3\log\left(1+ice^{2ia+2ibx}\right)+ \\
&= \frac{bx^4}{12}+\frac{1}{3}x^3\cot^{-1}(c-(1+ic)\cot(a+bx))+\frac{1}{6}ix^3\log\left(1+ice^{2ia+2ibx}\right)+ \\
&= \frac{bx^4}{12}+\frac{1}{3}x^3\cot^{-1}(c-(1+ic)\cot(a+bx))+\frac{1}{6}ix^3\log\left(1+ice^{2ia+2ibx}\right)+ \\
&= \frac{bx^4}{12}+\frac{1}{3}x^3\cot^{-1}(c-(1+ic)\cot(a+bx))+\frac{1}{6}ix^3\log\left(1+ice^{2ia+2ibx}\right)+
\end{aligned}
$$

Mathematica [A] time = 0.23, size = 136, normalized size = 0.88

$$
\frac{1}{24}\left(\frac{3\text{Li}_4\left(\frac{ie^{-2i(a+bx)}}{c}\right)}{b^3}+\frac{6ix\text{Li}_3\left(\frac{ie^{-2i(a+bx)}}{c}\right)}{b^2}-\frac{6x^2\text{Li}_2\left(\frac{ie^{-2i(a+bx)}}{c}\right)}{b}+4ix^3\log\left(1-\frac{ie^{-2i(a+bx)}}{c}\right)+8x^3\cot^{-1}(c+(-1-ic)\right.
$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*ArcCot[c - (1 + I*c)*Cot[a + b*x]],x]
```

```
[Out] (8*x^3*ArcCot[c + (-1 - I*c)*Cot[a + b*x]] + (4*I)*x^3*Log[1 - I/(c*E^((2*I
)*(a + b*x)))] - (6*x^2*PolyLog[2, I/(c*E^((2*I)*(a + b*x)))])/b + ((6*I)*x
*PolyLog[3, I/(c*E^((2*I)*(a + b*x)))])/b^2 + (3*PolyLog[4, I/(c*E^((2*I)*(
a + b*x)))])/b^3)/24
```

fricas [C] time = 0.81, size = 173, normalized size = 1.12

$$\frac{2\,b^4x^4 + 8\,\pi b^3x^3 + 4i\,b^3x^3\log\left(\frac{(c-i)e^{(2i\,bx+2i\,a)}}{ce^{(2i\,bx+2i\,a)}-i}\right) + 6\,b^2x^2\mathrm{Li}_2\left(-i\,ce^{(2i\,bx+2i\,a)}\right) - 2\,a^4 - 4i\,a^3\log\left(\frac{ce^{(2i\,bx+2i\,a)}-i}{c}\right) + 6i\,b}{24\,b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(pi-arccot(-c+(1+I*c)*cot(b*x+a))),x, algorithm="fricas")
```

```
[Out] 1/24*(2*b^4*x^4 + 8*pi*b^3*x^3 + 4*I*b^3*x^3*log((c - I)*e^(2*I*b*x + 2*I*a
)/(c*e^(2*I*b*x + 2*I*a) - I)) + 6*b^2*x^2*dilog(-I*c*e^(2*I*b*x + 2*I*a))
- 2*a^4 - 4*I*a^3*log((c*e^(2*I*b*x + 2*I*a) - I)/c) + 6*I*b*x*polylog(3, -
I*c*e^(2*I*b*x + 2*I*a)) + (4*I*b^3*x^3 + 4*I*a^3)*log(I*c*e^(2*I*b*x + 2*I
*a) + 1) - 3*polylog(4, -I*c*e^(2*I*b*x + 2*I*a)))/b^3
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (\pi - \operatorname{arccot}((i\,c + 1)\cot(bx + a) - c))x^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(pi-arccot(-c+(1+I*c)*cot(b*x+a))),x, algorithm="giac")
```

```
[Out] integrate((pi - arccot((I*c + 1)*cot(b*x + a) - c))*x^2, x)
```

maple [C] time = 6.80, size = 1527, normalized size = 9.85

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(Pi-arccot(-c+(1+I*c)*cot(b*x+a))),x)
```

```
[Out] 1/12*x^3*Pi*csgn(I*(c-I)/(exp(2*I*(b*x+a))-1))^3+1/12*x^3*Pi*csgn(I*exp(2*I
*(b*x+a)))*csgn(I*(c-I)/(exp(2*I*(b*x+a))-1))*csgn(I*exp(2*I*(b*x+a))*(c-I)
/(exp(2*I*(b*x+a))-1))+1/4*x^2*polylog(2,-I*exp(2*I*(b*x+a))*c)/b+1/12*b*x^
4-1/12*x^3*Pi*csgn(I*(exp(2*I*(b*x+a))*c-I))*csgn(I/(exp(2*I*(b*x+a))-1))*c
sgn(I*(exp(2*I*(b*x+a))*c-I)/(exp(2*I*(b*x+a))-1))-1/12*x^3*Pi*csgn(I*(exp(
2*I*(b*x+a))*c-I)/(exp(2*I*(b*x+a))-1))^3+1/12*x^3*Pi*csgn(exp(2*I*(b*x+a))
*(c-I)/(exp(2*I*(b*x+a))-1))^2-1/12*x^3*Pi*csgn((exp(2*I*(b*x+a))*c-I)/(exp
(2*I*(b*x+a))-1))^3+1/6*I*x^3*ln(1+I*c*exp(2*I*(b*x+a)))-1/4/b^3*polylog(2,
-I*exp(2*I*(b*x+a))*c)*a^2+1/12*x^3*Pi*csgn(I*exp(2*I*(b*x+a)))^3-1/6*I*x^3
*ln(exp(2*I*(b*x+a))*c-I)-1/12*x^3*Pi*csgn(I*(exp(2*I*(b*x+a))*c-I)/(exp(2*
I*(b*x+a))-1))*csgn((exp(2*I*(b*x+a))*c-I)/(exp(2*I*(b*x+a))-1))-1/12*x^3*P
i*csgn(I*(c-I))*csgn(I*(c-I)/(exp(2*I*(b*x+a))-1))^2-1/12*x^3*Pi*csgn(I/(ex
p(2*I*(b*x+a))-1))*csgn(I*(c-I)/(exp(2*I*(b*x+a))-1))^2+1/12*x^3*Pi*csgn(I*
(exp(2*I*(b*x+a))*c-I))*csgn(I*(exp(2*I*(b*x+a))*c-I)/(exp(2*I*(b*x+a))-1))
^2+1/4*I*x*polylog(3,-I*exp(2*I*(b*x+a))*c)/b^2-1/12*x^3*Pi*csgn(I*exp(2*I*
(b*x+a)))*csgn(I*exp(2*I*(b*x+a))*(c-I)/(exp(2*I*(b*x+a))-1))^2-1/12*x^3*Pi
*csgn(I*(c-I)/(exp(2*I*(b*x+a))-1))*csgn(I*exp(2*I*(b*x+a))*(c-I)/(exp(2*I*
(b*x+a))-1))^2+1/12*x^3*Pi*csgn(I*(exp(2*I*(b*x+a))*c-I)/(exp(2*I*(b*x+a))-
1))*csgn((exp(2*I*(b*x+a))*c-I)/(exp(2*I*(b*x+a))-1))^2+1/12*x^3*Pi*csgn(I*
(c-I))*csgn(I/(exp(2*I*(b*x+a))-1))*csgn(I*(c-I)/(exp(2*I*(b*x+a))-1))-1/6*
x^3*Pi*csgn(I*exp(I*(b*x+a)))*csgn(I*exp(2*I*(b*x+a)))^2+1/12*x^3*Pi*csgn((
exp(2*I*(b*x+a))*c-I)/(exp(2*I*(b*x+a))-1))^2-1/12*x^3*Pi*csgn(I*exp(2*I*(b
*x+a))*(c-I)/(exp(2*I*(b*x+a))-1))*csgn(exp(2*I*(b*x+a))*(c-I)/(exp(2*I*(b*
x+a))-1))^2-1/12*x^3*Pi*csgn(exp(2*I*(b*x+a))*(c-I)/(exp(2*I*(b*x+a))-1))^3
+1/2/b^3*a^2*dilog(1+I*exp(I*(b*x+a))*(I*c)^(1/2))+1/2/b^3*a^2*dilog(1-I*ex
p(I*(b*x+a))*(I*c)^(1/2))-1/2*I/b^2*ln(1+I*c*exp(2*I*(b*x+a)))*x*a^2+1/2*I/
b^2*a^2*ln(1+I*exp(I*(b*x+a))*(I*c)^(1/2))*x+1/2*I/b^2*a^2*ln(1-I*exp(I*(b*
```

```
x+a))*(I*c)^(1/2))*x+1/12*x^3*Pi*csgn(I*exp(2*I*(b*x+a))*(c-I)/(exp(2*I*(b*
x+a))-1))*csgn(exp(2*I*(b*x+a))*(c-I)/(exp(2*I*(b*x+a))-1))+1/12*x^3*Pi*csg
n(I/(exp(2*I*(b*x+a))-1))*csgn(I*(exp(2*I*(b*x+a))*c-I)/(exp(2*I*(b*x+a))-1
))^2-1/8*polylog(4,-I*exp(2*I*(b*x+a))*c)/b^3+1/3*I*x^3*ln(exp(I*(b*x+a)))+
1/12*x^3*Pi*csgn(I*exp(I*(b*x+a)))^2*csgn(I*exp(2*I*(b*x+a)))+1/6*I*x^3*ln(
c-I)+1/2*I/b^3*a^3*ln(1+I*exp(I*(b*x+a))*(I*c)^(1/2))+1/2*I/b^3*a^3*ln(1-I*
exp(I*(b*x+a))*(I*c)^(1/2))-1/3*I/b^3*ln(1+I*c*exp(2*I*(b*x+a)))*a^3-1/6*I/
b^3*a^3*ln(-exp(2*I*(b*x+a))*c+I)+1/12*x^3*Pi*csgn(I*exp(2*I*(b*x+a))*(c-I)
/(exp(2*I*(b*x+a))-1))^3
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(pi-arccot(-c+(1+I*c)*cot(b*x+a))),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(c-1>0)', see `assume?` for more det
ails)Is c-1 zero or nonzero?
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.01

$$\int x^2\,\left(\Pi+\mathrm{acot}\left(c-\cot\left(a+b\,x\right)\,\left(1+c\,1\mathrm{i}\right)\right)\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(Pi + acot(c - cot(a + b*x)*(c*1i + 1))),x)
```

```
[Out] int(x^2*(Pi + acot(c - cot(a + b*x)*(c*1i + 1))), x)
```

sympy [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: CoercionFailed

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(pi-acot(-c+(1+I*c)*cot(b*x+a))),x)
```

```
[Out] Exception raised: CoercionFailed
```

3.180 $\int x \cot^{-1}(c-(1+ic)\cot(a+bx))\,dx$

Optimal. Leaf size=124

$$\frac{i\text{Li}_3\left(-ice^{2ia+2ibx}\right)}{8b^2}+\frac{x\text{Li}_2\left(-ice^{2ia+2ibx}\right)}{4b}+\frac{1}{4}ix^2\log\left(1+ice^{2ia+2ibx}\right)+\frac{1}{2}x^2\cot^{-1}(c-(1+ic)\cot(a+bx))+\frac{bx^3}{6}$$

```
[Out] 1/6*b*x^3+1/2*x^2*(Pi-arccot(-c+(1+I*c)*cot(b*x+a)))+1/4*I*x^2*ln(1+I*c*exp
(2*I*a+2*I*b*x))+1/4*x*polylog(2,-I*c*exp(2*I*a+2*I*b*x))/b+1/8*I*polylog(3
,-I*c*exp(2*I*a+2*I*b*x))/b^2
```

Rubi [A] time = 0.22, antiderivative size = 124, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.300$, Rules used = {5174, 2184, 2190, 2531, 2282, 6589}

$$\frac{i\text{PolyLog}\left(3,-ice^{2ia+2ibx}\right)}{8b^2}+\frac{x\text{PolyLog}\left(2,-ice^{2ia+2ibx}\right)}{4b}+\frac{1}{4}ix^2\log\left(1+ice^{2ia+2ibx}\right)+\frac{1}{2}x^2\cot^{-1}(c-(1+ic)\cot(a+b$$

Antiderivative was successfully verified.

```
[In] Int[x*ArcCot[c - (1 + I*c)*Cot[a + b*x]],x]
```

```
[Out] (b*x^3)/6 + (x^2*ArcCot[c - (1 + I*c)*Cot[a + b*x]])/2 + (I/4)*x^2*Log[1 +
I*c*E^((2*I)*a + (2*I)*b*x)] + (x*PolyLog[2, (-I)*c*E^((2*I)*a + (2*I)*b*x)
])/(4*b) + ((I/8)*PolyLog[3, (-I)*c*E^((2*I)*a + (2*I)*b*x)])/b^2
```

Rule 2184

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x
_))))^(n_.)), x_Symbol] :> Simp[(c + d*x)^(m + 1)/(a*d*(m + 1)), x] - Dist[
b/a, Int[((c + d*x)^m*(F^(g*(e + f*x)))^n)/(a + b*(F^(g*(e + f*x)))^n), x],
 x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 5174

```
Int[ArcCot[(c_.) + Cot[(a_.) + (b_.)*(x_)]*(d_.)]*((e_.) + (f_.)*(x_))^(m_.
), x_Symbol] :> Simp[((e + f*x)^(m + 1)*ArcCot[c + d*Cot[a + b*x]])/(f*(m +
```

```
 1)), x] + Dist[(I*b)/(f*(m + 1)), Int[(e + f*x)^(m + 1)/(c - I*d - c*E^(2*
I*a + 2*I*b*x)), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && Eq
Q[(c - I*d)^2, -1]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int x\cot^{-1}(c-(1+ic)\cot(a+bx))\,dx = \frac{1}{2}x^2\cot^{-1}(c-(1+ic)\cot(a+bx))+\frac{1}{2}(ib)\int\frac{x^2}{-i(-1-ic)+c-ce^{2ia+2ibx}}$$

$$= \frac{bx^3}{6}+\frac{1}{2}x^2\cot^{-1}(c-(1+ic)\cot(a+bx))+\frac{1}{2}(bc)\int\frac{e^{2ia+2ibx}x^2}{-i(-1-ic)+c-ce^{2}}$$

$$= \frac{bx^3}{6}+\frac{1}{2}x^2\cot^{-1}(c-(1+ic)\cot(a+bx))+\frac{1}{4}ix^2\log\left(1+ice^{2ia+2ibx}\right)-\frac{1}{2}$$

$$= \frac{bx^3}{6}+\frac{1}{2}x^2\cot^{-1}(c-(1+ic)\cot(a+bx))+\frac{1}{4}ix^2\log\left(1+ice^{2ia+2ibx}\right)+$$

$$= \frac{bx^3}{6}+\frac{1}{2}x^2\cot^{-1}(c-(1+ic)\cot(a+bx))+\frac{1}{4}ix^2\log\left(1+ice^{2ia+2ibx}\right)+$$

$$= \frac{bx^3}{6}+\frac{1}{2}x^2\cot^{-1}(c-(1+ic)\cot(a+bx))+\frac{1}{4}ix^2\log\left(1+ice^{2ia+2ibx}\right)+$$

Mathematica [A] time = 0.13, size = 110, normalized size = 0.89

$$\frac{i\left(2b^2x^2\log\left(1-\frac{ie^{-2i(a+bx)}}{c}\right)+2ibx\text{Li}_2\left(\frac{ie^{-2i(a+bx)}}{c}\right)+\text{Li}_3\left(\frac{ie^{-2i(a+bx)}}{c}\right)\right)}{8b^2}+\frac{1}{2}x^2\cot^{-1}(c+(-1-ic)\cot(a+bx))$$

Antiderivative was successfully verified.

```
[In] Integrate[x*ArcCot[c - (1 + I*c)*Cot[a + b*x]],x]
```

```
[Out] (x^2*ArcCot[c + (-1 - I*c)*Cot[a + b*x]])/2 + ((I/8)*(2*b^2*x^2*Log[1 - I/(
c*E^((2*I)*(a + b*x)))] + (2*I)*b*x*PolyLog[2, I/(c*E^((2*I)*(a + b*x)))] +
 PolyLog[3, I/(c*E^((2*I)*(a + b*x)))]))/b^2
```

fricas [C] time = 0.69, size = 151, normalized size = 1.22

$$\frac{4\,b^3x^3+12\,\pi b^2x^2+6i\,b^2x^2\log\left(\frac{(c-i)e^{(2i\,bx+2i\,a)}}{ce^{(2i\,bx+2i\,a)}-i}\right)+4\,a^3+6\,bx\text{Li}_2\left(-i\,ce^{(2i\,bx+2i\,a)}\right)+6i\,a^2\log\left(\frac{ce^{(2i\,bx+2i\,a)}-i}{c}\right)+\left(6i\,b^2x^2\right.}{24\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(pi-arccot(-c+(1+I*c)*cot(b*x+a))),x, algorithm="fricas")
```

```
[Out] 1/24*(4*b^3*x^3 + 12*pi*b^2*x^2 + 6*I*b^2*x^2*log((c - I)*e^(2*I*b*x + 2*I*
a)/(c*e^(2*I*b*x + 2*I*a) - I)) + 4*a^3 + 6*b*x*dilog(-I*c*e^(2*I*b*x + 2*I
*a)) + 6*I*a^2*log((c*e^(2*I*b*x + 2*I*a) - I)/c) + (6*I*b^2*x^2 - 6*I*a^2)
*log(I*c*e^(2*I*b*x + 2*I*a) + 1) + 3*I*polylog(3, -I*c*e^(2*I*b*x + 2*I*a)
))/b^2
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (\pi - \operatorname{arccot}((i\,c + 1)\cot(bx + a) - c))x\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(pi-arccot(-c+(1+I*c)*cot(b*x+a))),x, algorithm="giac")
[Out] integrate((pi - arccot((I*c + 1)*cot(b*x + a) - c))*x, x)
```

maple [C] time = 6.07, size = 1492, normalized size = 12.03

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(Pi-arccot(-c+(1+I*c)*cot(b*x+a))),x)
[Out] 1/2*I*x^2*ln(exp(I*(b*x+a)))+1/4*I*x^2*ln(1+I*c*exp(2*I*(b*x+a)))+1/8*x^2*P
i*csgn(I*exp(2*I*(b*x+a))*(c-I)/(exp(2*I*(b*x+a))-1))*csgn(exp(2*I*(b*x+a))
*(c-I)/(exp(2*I*(b*x+a))-1))+1/8*x^2*Pi*csgn(I*exp(2*I*(b*x+a))*(c-I)/(exp(
2*I*(b*x+a))-1))^3-1/8*x^2*Pi*csgn(exp(2*I*(b*x+a))*(c-I)/(exp(2*I*(b*x+a))
-1))^3+1/8*x^2*Pi*csgn(I*(exp(2*I*(b*x+a))*c-I))*csgn(I*(exp(2*I*(b*x+a))*c
-I)/(exp(2*I*(b*x+a))-1))^2+1/8*x^2*Pi*csgn(I/(exp(2*I*(b*x+a))-1))*csgn(I*
(exp(2*I*(b*x+a))*c-I)/(exp(2*I*(b*x+a))-1))^2-1/8*x^2*Pi*csgn(I*(c-I))*csg
n(I*(c-I)/(exp(2*I*(b*x+a))-1))^2-1/8*x^2*Pi*csgn(I/(exp(2*I*(b*x+a))-1))*c
sgn(I*(c-I)/(exp(2*I*(b*x+a))-1))^2-1/8*x^2*Pi*csgn(I*exp(2*I*(b*x+a)))*csg
n(I*exp(2*I*(b*x+a))*(c-I)/(exp(2*I*(b*x+a))-1))^2-1/4*I*x^2*ln(exp(2*I*(b*
x+a))*c-I)+1/8*I*polylog(3,-I*exp(2*I*(b*x+a))*c)/b^2-1/2*I/b*a*ln(1+I*exp(
I*(b*x+a))*(I*c)^(1/2))*x-1/2*I/b*a*ln(1-I*exp(I*(b*x+a))*(I*c)^(1/2))*x-1/
8*x^2*Pi*csgn(I*(exp(2*I*(b*x+a))*c-I)/(exp(2*I*(b*x+a))-1))*csgn((exp(2*I*
(b*x+a))*c-I)/(exp(2*I*(b*x+a))-1))-1/8*x^2*Pi*csgn(I*exp(2*I*(b*x+a))*(c-I
)/(exp(2*I*(b*x+a))-1))*csgn(exp(2*I*(b*x+a))*(c-I)/(exp(2*I*(b*x+a))-1))^2
-1/8*x^2*Pi*csgn(I*(c-I)/(exp(2*I*(b*x+a))-1))*csgn(I*exp(2*I*(b*x+a))*(c-I
)/(exp(2*I*(b*x+a))-1))^2+1/8*x^2*Pi*csgn(I*(exp(2*I*(b*x+a))*c-I)/(exp(2*I
*(b*x+a))-1))*csgn((exp(2*I*(b*x+a))*c-I)/(exp(2*I*(b*x+a))-1))^2-1/8*x^2*P
i*csgn(I*(exp(2*I*(b*x+a))*c-I)/(exp(2*I*(b*x+a))-1))^3+1/8*x^2*Pi*csgn(I*(
c-I)/(exp(2*I*(b*x+a))-1))^3+1/8*x^2*Pi*csgn(exp(2*I*(b*x+a))*(c-I)/(exp(2*
I*(b*x+a))-1))^2-1/8*x^2*Pi*csgn((exp(2*I*(b*x+a))*c-I)/(exp(2*I*(b*x+a))-1
))^3+1/8*x^2*Pi*csgn(I*exp(I*(b*x+a)))^2*csgn(I*exp(2*I*(b*x+a)))-1/4*x^2*P
i*csgn(I*exp(I*(b*x+a)))*csgn(I*exp(2*I*(b*x+a)))^2+1/8*x^2*Pi*csgn(I*exp(2
*I*(b*x+a)))^3-1/8*x^2*Pi*csgn(I*(exp(2*I*(b*x+a))*c-I))*csgn(I/(exp(2*I*(b
*x+a))-1))*csgn(I*(exp(2*I*(b*x+a))*c-I)/(exp(2*I*(b*x+a))-1))+1/4*I/b^2*ln
(1+I*c*exp(2*I*(b*x+a)))*a^2+1/4*I/b^2*a^2*ln(-exp(2*I*(b*x+a))*c+I)-1/2*I/
b^2*a^2*ln(1+I*exp(I*(b*x+a))*(I*c)^(1/2))-1/2*I/b^2*a^2*ln(1-I*exp(I*(b*x+
a))*(I*c)^(1/2))+1/2*I/b*ln(1+I*c*exp(2*I*(b*x+a)))*x*a+1/6*b*x^3+1/4*x*pol
ylog(2,-I*exp(2*I*(b*x+a))*c)/b+1/4*I*x^2*ln(c-I)-1/2/b^2*a*dilog(1+I*exp(I
*(b*x+a))*(I*c)^(1/2))-1/2/b^2*a*dilog(1-I*exp(I*(b*x+a))*(I*c)^(1/2))+1/4/
b^2*polylog(2,-I*exp(2*I*(b*x+a))*c)*a+1/8*x^2*Pi*csgn(I*(c-I))*csgn(I/(exp
(2*I*(b*x+a))-1))*csgn(I*(c-I)/(exp(2*I*(b*x+a))-1))+1/8*x^2*Pi*csgn(I*exp(
2*I*(b*x+a)))*csgn(I*(c-I)/(exp(2*I*(b*x+a))-1))*csgn(I*exp(2*I*(b*x+a))*(c
-I)/(exp(2*I*(b*x+a))-1))+1/8*x^2*Pi*csgn((exp(2*I*(b*x+a))*c-I)/(exp(2*I*(
b*x+a))-1))^2
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(pi-arccot(-c+(1+I*c)*cot(b*x+a))),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(c-1>0)', see `assume?` for more det
ails)Is c-1 zero or nonzero?
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.01

$$\int x\,\left(\Pi+\mathrm{acot}\left(c-\cot\left(a+b\,x\right)\,\left(1+c\,1\mathrm{i}\right)\right)\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(Pi + acot(c - cot(a + b*x)*(c*1i + 1))),x)
```

```
[Out] int(x*(Pi + acot(c - cot(a + b*x)*(c*1i + 1))), x)
```

sympy [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: CoercionFailed

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(pi-acot(-c+(1+I*c)*cot(b*x+a))),x)
```

```
[Out] Exception raised: CoercionFailed
```

3.181 $\int \cot^{-1}(c-(1+ic)\cot(a+bx))\,dx$

Optimal. Leaf size=86

$$\frac{\text{Li}_2\left(-ice^{2ia+2ibx}\right)}{4b}+\frac{1}{2}ix\log\left(1+ice^{2ia+2ibx}\right)+x\cot^{-1}(c-(1+ic)\cot(a+bx))+\frac{bx^2}{2}$$

```
[Out] 1/2*b*x^2+x*(Pi-arccot(-c+(1+I*c)*cot(b*x+a)))+1/2*I*x*ln(1+I*c*exp(2*I*a+2
*I*b*x))+1/4*polylog(2,-I*c*exp(2*I*a+2*I*b*x))/b
```

Rubi [A] time = 0.13, antiderivative size = 86, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.278, Rules used = {5166, 2184, 2190, 2279, 2391}

$$\frac{\text{PolyLog}\left(2,-ice^{2ia+2ibx}\right)}{4b}+\frac{1}{2}ix\log\left(1+ice^{2ia+2ibx}\right)+x\cot^{-1}(c-(1+ic)\cot(a+bx))+\frac{bx^2}{2}$$

Antiderivative was successfully verified.

```
[In] Int[ArcCot[c - (1 + I*c)*Cot[a + b*x]],x]
```

```
[Out] (b*x^2)/2 + x*ArcCot[c - (1 + I*c)*Cot[a + b*x]] + (I/2)*x*Log[1 + I*c*E^((
2*I)*a + (2*I)*b*x)] + PolyLog[2, (-I)*c*E^((2*I)*a + (2*I)*b*x)]/(4*b)
```

Rule 2184

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x
_))))^(n_.)), x_Symbol] :> Simp[(c + d*x)^(m + 1)/(a*d*(m + 1)), x] - Dist[
b/a, Int[((c + d*x)^m*(F^(g*(e + f*x)))^n)/(a + b*(F^(g*(e + f*x)))^n), x],
 x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 5166

```
Int[ArcCot[(c_.) + Cot[(a_.) + (b_.)*(x_)]*(d_.)], x_Symbol] :> Simp[x*ArcC
ot[c + d*Cot[a + b*x]], x] + Dist[I*b, Int[x/(c - I*d - c*E^(2*I*a + 2*I*b*
x)), x], x] /; FreeQ[{a, b, c, d}, x] && EqQ[(c - I*d)^2, -1]
```

Rubi steps

$$\int \cot^{-1}(c-(1+ic)\cot(a+bx))\,dx = x\cot^{-1}(c-(1+ic)\cot(a+bx)) + (ib)\int \frac{x}{-i(-1-ic)+c-ce^{2ia+2ibx}}\,dx$$
$$= \frac{bx^2}{2} + x\cot^{-1}(c-(1+ic)\cot(a+bx)) + (bc)\int \frac{e^{2ia+2ibx}x}{-i(-1-ic)+c-ce^{2ia+2ibx}}$$
$$= \frac{bx^2}{2} + x\cot^{-1}(c-(1+ic)\cot(a+bx)) + \frac{1}{2}ix\log\left(1+ice^{2ia+2ibx}\right) - \frac{1}{2}i\int \mathrm{lo}$$
$$= \frac{bx^2}{2} + x\cot^{-1}(c-(1+ic)\cot(a+bx)) + \frac{1}{2}ix\log\left(1+ice^{2ia+2ibx}\right) - \frac{\mathrm{Subst}\Big(}{}$$
$$= \frac{bx^2}{2} + x\cot^{-1}(c-(1+ic)\cot(a+bx)) + \frac{1}{2}ix\log\left(1+ice^{2ia+2ibx}\right) + \frac{\mathrm{Li}_2\left(-i\right.}{}$$

Mathematica [B] time = 2.84, size = 872, normalized size = 10.14

$$x\cot^{-1}(c+(-ic-1)\cot(a+bx)) - \frac{ix\csc(a+bx)\Big(2bx\log(2\cos(bx)(c}{(\cot(a+bx)+i)((c-i)\cos(a+bx)+i(c+i)\sin(a+bx))\left(\frac{\log\left(\frac{1}{2}\sec(bx)(\cos(a)+i\sin(a))\right.}{}\right.}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[ArcCot[c - (1 + I*c)*Cot[a + b*x]],x]
```

```
[Out] x*ArcCot[c + (-1 - I*c)*Cot[a + b*x]] - (I*x*Csc[a + b*x]*(2*b*x*Log[2*Cos[
b*x]*(Cos[b*x] - I*Sin[b*x])] + I*Log[(Sec[b*x]*(Cos[a] - I*Sin[a])*((-I +
c)*Cos[a + b*x] + I*(I + c)*Sin[a + b*x]))/(2*c)]*Log[1 - I*Tan[b*x]] - I*L
og[(Sec[b*x]*(Cos[a] + I*Sin[a])*((1 + I*c)*Cos[a + b*x] - (I + c)*Sin[a +
b*x]))/2]*Log[1 + I*Tan[b*x]] + I*PolyLog[2, -Cos[2*b*x] + I*Sin[2*b*x]] +
I*PolyLog[2, (Sec[b*x]*((I + c)*Cos[a] + (1 + I*c)*Sin[a])*(Cos[a + b*x] -
I*Sin[a + b*x]))/(2*c)] - I*PolyLog[2, ((Cos[a] + I*Sin[a])*((I + c)*Cos[a]
 + (1 + I*c)*Sin[a])*(-I + Tan[b*x]))/2])*(Cos[b*x] - I*Sin[b*x])*(Cos[b*x]
 + I*Sin[b*x]))/((I + Cot[a + b*x])*((-I + c)*Cos[a + b*x] + I*(I + c)*Sin[
a + b*x])*((-2*I)*b*x - Log[1 - (Sec[b*x]*((I + c)*Cos[a] + (1 + I*c)*Sin[a
])*(Cos[a + b*x] - I*Sin[a + b*x]))/(2*c)] - (Log[1 - I*Tan[b*x]]*((I + c)*
Cos[a + b*x] + (1 + I*c)*Sin[a + b*x]))/((-I + c)*Cos[a + b*x] + I*(I + c)*
Sin[a + b*x]) + (Log[1 + I*Tan[b*x]]*((I + c)*Cos[a + b*x] + (1 + I*c)*Sin[
a + b*x]))/((-I + c)*Cos[a + b*x] + I*(I + c)*Sin[a + b*x]) + (Log[(Sec[b*x
]*(Cos[a] + I*Sin[a])*((1 + I*c)*Cos[a + b*x] - (I + c)*Sin[a + b*x]))/2]*S
ec[b*x]^2)/(1 + I*Tan[b*x]) - 2*b*x*Tan[b*x] - I*Log[1 - (Sec[b*x]*((I + c)
*Cos[a] + (1 + I*c)*Sin[a])*(Cos[a + b*x] - I*Sin[a + b*x]))/(2*c)]*Tan[b*x
] + I*Log[1 - I*Tan[b*x]]*Tan[b*x] - I*Log[1 + I*Tan[b*x]]*Tan[b*x] + (I*Lo
g[1 - ((Cos[a] + I*Sin[a])*((I + c)*Cos[a] + (1 + I*c)*Sin[a])*(-I + Tan[b*
x]))/2]*Sec[b*x]^2)/(-I + Tan[b*x]) + (I*Log[(Sec[b*x]*(Cos[a] - I*Sin[a])*
((-I + c)*Cos[a + b*x] + I*(I + c)*Sin[a + b*x]))/(2*c)]*Sec[b*x]^2)/(I + T
an[b*x])))
```

fricas [A] time = 0.82, size = 115, normalized size = 1.34

$$\frac{2\,b^2x^2 + 4\,\pi bx + 2i\,bx\log\left(\frac{(c-i)e^{(2i\,bx+2i\,a)}}{ce^{(2i\,bx+2i\,a)}-i}\right) - 2\,a^2 + (2i\,bx+2i\,a)\log\left(i\,ce^{(2i\,bx+2i\,a)}+1\right) - 2i\,a\log\left(\frac{ce^{(2i\,bx+2i\,a)}-i}{c}\right) + \mathrm{Li}}{4\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(pi-arccot(-c+(1+I*c)*cot(b*x+a)),x, algorithm="fricas")
```

```
[Out] 1/4*(2*b^2*x^2 + 4*pi*b*x + 2*I*b*x*log((c - I)*e^(2*I*b*x + 2*I*a)/(c*e^(2
*I*b*x + 2*I*a) - I)) - 2*a^2 + (2*I*b*x + 2*I*a)*log(I*c*e^(2*I*b*x + 2*I*
a) + 1) - 2*I*a*log((c*e^(2*I*b*x + 2*I*a) - I)/c) + dilog(-I*c*e^(2*I*b*x
+ 2*I*a)))/b
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \pi - \operatorname{arccot}\left((i\,c+1)\cot\left(bx+a\right)-c\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(pi-arccot(-c+(1+I*c)*cot(b*x+a)),x, algorithm="giac")
```

```
[Out] integrate(pi - arccot((I*c + 1)*cot(b*x + a) - c), x)
```

maple [B] time = 0.76, size = 1756, normalized size = 20.42

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(Pi-arccot(-c+(1+I*c)*cot(b*x+a)),x)
```

```
[Out] 1/(1+I*c)/b*arccot(-c+(1+I*c)*cot(b*x+a))/(2*I-2*c)*ln(-c-(1+I*c)*cot(b*x+a
)+I)+1/4/(1+I*c)/b/(I-c)*ln(I-c+(1+I*c)*cot(b*x+a))^2*c+1/2/(1+I*c)/b/(I-c)
*dilog(-1/2*I*(I-c+(1+I*c)*cot(b*x+a)))*c+1/2/(1+I*c)/b/(I-c)*dilog(1/2*(c-
(1+I*c)*cot(b*x+a)+I)/c)*c-1/2/(1+I*c)/b/(I-c)*dilog((c-(1+I*c)*cot(b*x+a)-
I)/(-2*I+2*c))*c-1/4*I/(1+I*c)/b/(I-c)*dilog(1/2*(c-(1+I*c)*cot(b*x+a)+I)/c
)+1/4*I/(1+I*c)/b/(I-c)*dilog((c-(1+I*c)*cot(b*x+a)-I)/(-2*I+2*c))-1/8*I/(1
+I*c)/b/(I-c)*ln(I-c+(1+I*c)*cot(b*x+a))^2+1/(1+I*c)/b*arccot(-c+(1+I*c)*co
t(b*x+a))/(2*I-2*c)*ln(I-c+(1+I*c)*cot(b*x+a))*c^2-1/(1+I*c)/b*arccot(-c+(1
+I*c)*cot(b*x+a))/(2*I-2*c)*ln(-c-(1+I*c)*cot(b*x+a)+I)*c^2+1/4*I/(1+I*c)/b
/(I-c)*dilog(1/2*(c-(1+I*c)*cot(b*x+a)+I)/c)*c^2-1/4*I/(1+I*c)/b/(I-c)*dilo
g((c-(1+I*c)*cot(b*x+a)-I)/(-2*I+2*c))*c^2-1/(1+I*c)/b*arccot(-c+(1+I*c)*co
t(b*x+a))/(2*I-2*c)*ln(I-c+(1+I*c)*cot(b*x+a))+1/4*I/(1+I*c)/b/(I-c)*dilog(
-1/2*I*(I-c+(1+I*c)*cot(b*x+a)))*c^2+1/4*I/(1+I*c)/b/(I-c)*ln(-c-(1+I*c)*co
t(b*x+a)+I)*ln((c-(1+I*c)*cot(b*x+a)-I)/(-2*I+2*c))+1/4*I/(1+I*c)/b/(I-c)*l
n(I-c+(1+I*c)*cot(b*x+a))*ln(-1/2*I*(c-(1+I*c)*cot(b*x+a)+I))-1/4*I/(1+I*c)
/b/(I-c)*ln(-1/2*I*(I-c+(1+I*c)*cot(b*x+a)))*ln(-1/2*I*(c-(1+I*c)*cot(b*x+a
)+I))-1/4*I/(1+I*c)/b/(I-c)*ln(-c-(1+I*c)*cot(b*x+a)+I)*ln(1/2*(c-(1+I*c)*c
ot(b*x+a)+I)/c)-1/2/(1+I*c)/b/(I-c)*ln(-c-(1+I*c)*cot(b*x+a)+I)*ln((c-(1+I*
c)*cot(b*x+a)-I)/(-2*I+2*c))*c+Pi*x+1/8*I/(1+I*c)/b/(I-c)*ln(I-c+(1+I*c)*co
t(b*x+a))^2*c^2+1/2/(1+I*c)/b/(I-c)*ln(-1/2*I*(I-c+(1+I*c)*cot(b*x+a)))*ln(
-1/2*I*(c-(1+I*c)*cot(b*x+a)+I))*c-1/2/(1+I*c)/b/(I-c)*ln(I-c+(1+I*c)*cot(b
*x+a))*ln(-1/2*I*(c-(1+I*c)*cot(b*x+a)+I))*c+1/2/(1+I*c)/b/(I-c)*ln(-c-(1+I
*c)*cot(b*x+a)+I)*ln(1/2*(c-(1+I*c)*cot(b*x+a)+I)/c)*c-2*I/(1+I*c)/b*arccot
(-c+(1+I*c)*cot(b*x+a))/(2*I-2*c)*ln(I-c+(1+I*c)*cot(b*x+a))*c+2*I/(1+I*c)/
b*arccot(-c+(1+I*c)*cot(b*x+a))/(2*I-2*c)*ln(-c-(1+I*c)*cot(b*x+a)+I)*c-1/4
*I/(1+I*c)/b/(I-c)*ln(I-c+(1+I*c)*cot(b*x+a))*ln(-1/2*I*(c-(1+I*c)*cot(b*x+
a)+I))*c^2+1/4*I/(1+I*c)/b/(I-c)*ln(-1/2*I*(I-c+(1+I*c)*cot(b*x+a)))*ln(-1/
2*I*(c-(1+I*c)*cot(b*x+a)+I))*c^2+1/4*I/(1+I*c)/b/(I-c)*ln(-c-(1+I*c)*cot(b
*x+a)+I)*ln(1/2*(c-(1+I*c)*cot(b*x+a)+I)/c)*c^2-1/4*I/(1+I*c)/b/(I-c)*ln(-c
-(1+I*c)*cot(b*x+a)+I)*ln((c-(1+I*c)*cot(b*x+a)-I)/(-2*I+2*c))*c^2-1/4*I/(1
+I*c)/b/(I-c)*dilog(-1/2*I*(I-c+(1+I*c)*cot(b*x+a)))
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(pi-arccot(-c+(1+I*c)*cot(b*x+a)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(c-1>0)', see `assume?` for more det
ails)Is c-1 zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \Pi + \operatorname{acot}\left(c - \cot\left(a + b\,x\right)\,\left(1 + c\,1\mathrm{i}\right)\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(Pi + acot(c - cot(a + b*x)*(c*1i + 1)),x)
```

```
[Out] int(Pi + acot(c - cot(a + b*x)*(c*1i + 1)), x)
```

sympy [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: CoercionFailed

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(pi-acot(-c+(1+I*c)*cot(b*x+a)),x)
```

```
[Out] Exception raised: CoercionFailed
```

3.182 $\int \frac{\cot^{-1}(c-(1+ic)\cot(a+bx))}{x}\,dx$

Optimal. Leaf size=25

$$\operatorname{Int}\left(\frac{\cot^{-1}(c-(1+ic)\cot(a+bx))}{x},x\right)$$

```
[Out] CannotIntegrate((Pi-arccot(-c+(1+I*c)*cot(b*x+a)))/x,x)
```

Rubi [A] time = 0.12, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\cot^{-1}(c-(1+ic)\cot(a+bx))}{x}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[ArcCot[c - (1 + I*c)*Cot[a + b*x]]/x,x]
```

```
[Out] Defer[Int][ArcCot[c - (1 + I*c)*Cot[a + b*x]]/x, x]
```

Rubi steps

$$\int \frac{\cot^{-1}(c-(1+ic)\cot(a+bx))}{x}\,dx = \int \frac{\cot^{-1}(c-(1+ic)\cot(a+bx))}{x}\,dx$$

Mathematica [A] time = 0.41, size = 0, normalized size = 0.00

$$\int \frac{\cot^{-1}(c-(1+ic)\cot(a+bx))}{x}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[ArcCot[c - (1 + I*c)*Cot[a + b*x]]/x,x]
```

```
[Out] Integrate[ArcCot[c - (1 + I*c)*Cot[a + b*x]]/x, x]
```

fricas [A] time = 0.51, size = 0, normalized size = 0.00

$$\operatorname{integral}\left(\frac{2\pi + i\log\left(\frac{(c-i)e^{(2i\,bx+2i\,a)}}{ce^{(2i\,bx+2i\,a)}-i}\right)}{2x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((pi-arccot(-c+(1+I*c)*cot(b*x+a)))/x,x, algorithm="fricas")
```

```
[Out] integral(1/2*(2*pi + I*log((c - I)*e^(2*I*b*x + 2*I*a)/(c*e^(2*I*b*x + 2*I*
a) - I)))/x, x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\pi - \operatorname{arccot}\left((i\,c+1)\cot\left(bx+a\right)-c\right)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((pi-arccot(-c+(1+I*c)*cot(b*x+a)))/x,x, algorithm="giac")
```

```
[Out] integrate((pi - arccot((I*c + 1)*cot(b*x + a) - c))/x, x)
```

maple [**A**] time = 2.31, size = 0, normalized size = 0.00

$$\int \frac{\pi - \operatorname{arccot}\left(-c + (ic + 1)\cot\left(bx + a\right)\right)}{x}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((Pi-arccot(-c+(1+I*c)*cot(b*x+a)))/x,x)
```

```
[Out] int((Pi-arccot(-c+(1+I*c)*cot(b*x+a)))/x,x)
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((pi-arccot(-c+(1+I*c)*cot(b*x+a)))/x,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(c-1>0)', see `assume?` for more det
ails)Is c-1 zero or nonzero?
```

mupad [**A**] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{\Pi + \operatorname{acot}\left(c - \cot\left(a + b\,x\right)\,\left(1 + c\,1\mathrm{i}\right)\right)}{x}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((Pi + acot(c - cot(a + b*x)*(c*1i + 1)))/x,x)
```

```
[Out] int((Pi + acot(c - cot(a + b*x)*(c*1i + 1)))/x, x)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((pi-acot(-c+(1+I*c)*cot(b*x+a)))/x,x)
```

```
[Out] Timed out
```

3.183 $\int (e+fx)^3 \cot^{-1}(\tanh(a+bx))\,dx$

Optimal. Leaf size=299

$$\frac{3if^3\text{Li}_5\left(-ie^{2a+2bx}\right)}{16b^4}-\frac{3if^3\text{Li}_5\left(ie^{2a+2bx}\right)}{16b^4}-\frac{3if^2(e+fx)\text{Li}_4\left(-ie^{2a+2bx}\right)}{8b^3}+\frac{3if^2(e+fx)\text{Li}_4\left(ie^{2a+2bx}\right)}{8b^3}+\frac{3if(e+fx)^2}{8}$$

```
[Out] 1/4*(f*x+e)^4*arccot(tanh(b*x+a))/f+1/4*(f*x+e)^4*arctan(exp(2*b*x+2*a))/f-
1/4*I*(f*x+e)^3*polylog(2,-I*exp(2*b*x+2*a))/b+1/4*I*(f*x+e)^3*polylog(2,I*
exp(2*b*x+2*a))/b+3/8*I*f*(f*x+e)^2*polylog(3,-I*exp(2*b*x+2*a))/b^2-3/8*I*
f*(f*x+e)^2*polylog(3,I*exp(2*b*x+2*a))/b^2-3/8*I*f^2*(f*x+e)*polylog(4,-I*
exp(2*b*x+2*a))/b^3+3/8*I*f^2*(f*x+e)*polylog(4,I*exp(2*b*x+2*a))/b^3+3/16*
I*f^3*polylog(5,-I*exp(2*b*x+2*a))/b^4-3/16*I*f^3*polylog(5,I*exp(2*b*x+2*a
))/b^4
```

Rubi [A] time = 0.21, antiderivative size = 299, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 6, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.400, Rules used = {5184, 4180, 2531, 6609, 2282, 6589}

$$-\frac{3if^2(e+fx)\text{PolyLog}\left(4,-ie^{2a+2bx}\right)}{8b^3}+\frac{3if^2(e+fx)\text{PolyLog}\left(4,ie^{2a+2bx}\right)}{8b^3}+\frac{3if(e+fx)^2\text{PolyLog}\left(3,-ie^{2a+2bx}\right)}{8b^2}$$

Antiderivative was successfully verified.

```
[In] Int[(e + f*x)^3*ArcCot[Tanh[a + b*x]],x]
```

```
[Out] ((e + f*x)^4*ArcCot[Tanh[a + b*x]])/(4*f) + ((e + f*x)^4*ArcTan[E^(2*a + 2*
b*x)])/(4*f) - ((I/4)*(e + f*x)^3*PolyLog[2, (-I)*E^(2*a + 2*b*x)])/b + ((I
/4)*(e + f*x)^3*PolyLog[2, I*E^(2*a + 2*b*x)])/b + (((3*I)/8)*f*(e + f*x)^2
*PolyLog[3, (-I)*E^(2*a + 2*b*x)])/b^2 - (((3*I)/8)*f*(e + f*x)^2*PolyLog[3
, I*E^(2*a + 2*b*x)])/b^2 - (((3*I)/8)*f^2*(e + f*x)*PolyLog[4, (-I)*E^(2*a
 + 2*b*x)])/b^3 + (((3*I)/8)*f^2*(e + f*x)*PolyLog[4, I*E^(2*a + 2*b*x)])/b
^3 + (((3*I)/16)*f^3*PolyLog[5, (-I)*E^(2*a + 2*b*x)])/b^4 - (((3*I)/16)*f^
3*PolyLog[5, I*E^(2*a + 2*b*x)])/b^4
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 4180

```
Int[csc[(e_.) + Pi*(k_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_
))^(m_.), x_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)/E^(
I*k*Pi)])/(f*fz*I), x] + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1
 - E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x] + Dist[(d*m)/(f*fz*I), Int[(c +
d*x)^(m - 1)*Log[1 + E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x]) /; FreeQ[{c,
d, e, f, fz}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 5184

```
Int[ArcCot[Tanh[(a_.) + (b_.)*(x_)]]*((e_.) + (f_.)*(x_))^(m_.), x_Symbol]
:> Simp[((e + f*x)^(m + 1)*ArcCot[Tanh[a + b*x]])/(f*(m + 1)), x] + Dist[b/
(f*(m + 1)), Int[(e + f*x)^(m + 1)*Sech[2*a + 2*b*x], x], x] /; FreeQ[{a, b
, e, f}, x] && IGtQ[m, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6609

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[((e + f*x)^m*PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p])/(b*c*p*Log[F]), x] - Dist[(f*m)/(b*c*p*Log[F]), Int[(e + f*x)^
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
 d, e, f, n, p}, x] && GtQ[m, 0]
```

Rubi steps

$$\int (e+fx)^3 \cot^{-1}(\tanh(a+bx))\,dx = \frac{(e+fx)^4\cot^{-1}(\tanh(a+bx))}{4f} + \frac{b\int (e+fx)^4\operatorname{sech}(2a+2bx)\,dx}{4f}$$

$$= \frac{(e+fx)^4\cot^{-1}(\tanh(a+bx))}{4f} + \frac{(e+fx)^4\tan^{-1}\left(e^{2a+2bx}\right)}{4f} - \frac{1}{2}i\int (e+fx)^3$$

$$= \frac{(e+fx)^4\cot^{-1}(\tanh(a+bx))}{4f} + \frac{(e+fx)^4\tan^{-1}\left(e^{2a+2bx}\right)}{4f} - \frac{i(e+fx)^3\mathrm{Li}_2\left(\right.}{4b}$$

$$= \frac{(e+fx)^4\cot^{-1}(\tanh(a+bx))}{4f} + \frac{(e+fx)^4\tan^{-1}\left(e^{2a+2bx}\right)}{4f} - \frac{i(e+fx)^3\mathrm{Li}_2\left(\right.}{4b}$$

$$= \frac{(e+fx)^4\cot^{-1}(\tanh(a+bx))}{4f} + \frac{(e+fx)^4\tan^{-1}\left(e^{2a+2bx}\right)}{4f} - \frac{i(e+fx)^3\mathrm{Li}_2\left(\right.}{4b}$$

$$= \frac{(e+fx)^4\cot^{-1}(\tanh(a+bx))}{4f} + \frac{(e+fx)^4\tan^{-1}\left(e^{2a+2bx}\right)}{4f} - \frac{i(e+fx)^3\mathrm{Li}_2\left(\right.}{4b}$$

$$= \frac{(e+fx)^4\cot^{-1}(\tanh(a+bx))}{4f} + \frac{(e+fx)^4\tan^{-1}\left(e^{2a+2bx}\right)}{4f} - \frac{i(e+fx)^3\mathrm{Li}_2\left(\right.}{4b}$$

Mathematica [B] time = 0.36, size = 600, normalized size = 2.01

$$\frac{1}{4}x\left(4e^3+6e^2fx+4ef^2x^2+f^3x^3\right)\cot^{-1}(\tanh(a+bx)) + \frac{i\left(8b^4e^3x\log\left(1-ie^{2(a+bx)}\right)-8b^4e^3x\log\left(1+ie^{2(a+bx)}\right)+1\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(e + f*x)^3*ArcCot[Tanh[a + b*x]],x]
```

```
[Out] (x*(4*e^3 + 6*e^2*f*x + 4*e*f^2*x^2 + f^3*x^3)*ArcCot[Tanh[a + b*x]])/4 + (
(I/16)*(8*b^4*e^3*x*Log[1 - I*E^(2*(a + b*x))] + 12*b^4*e^2*f*x^2*Log[1 - I
*E^(2*(a + b*x))] + 8*b^4*e*f^2*x^3*Log[1 - I*E^(2*(a + b*x))] + 2*b^4*f^3*
x^4*Log[1 - I*E^(2*(a + b*x))] - 8*b^4*e^3*x*Log[1 + I*E^(2*(a + b*x))] - 1
2*b^4*e^2*f*x^2*Log[1 + I*E^(2*(a + b*x))] - 8*b^4*e*f^2*x^3*Log[1 + I*E^(2
*(a + b*x))] - 2*b^4*f^3*x^4*Log[1 + I*E^(2*(a + b*x))] - 4*b^3*(e + f*x)^3
```

```
*PolyLog[2, (-I)*E^(2*(a + b*x))] + 4*b^3*(e + f*x)^3*PolyLog[2, I*E^(2*(a
+ b*x))] + 6*b^2*e^2*f*PolyLog[3, (-I)*E^(2*(a + b*x))] + 12*b^2*e*f^2*x*Po
lyLog[3, (-I)*E^(2*(a + b*x))] + 6*b^2*f^3*x^2*PolyLog[3, (-I)*E^(2*(a + b*
x))] - 6*b^2*e^2*f*PolyLog[3, I*E^(2*(a + b*x))] - 12*b^2*e*f^2*x*PolyLog[3
, I*E^(2*(a + b*x))] - 6*b^2*f^3*x^2*PolyLog[3, I*E^(2*(a + b*x))] - 6*b*e*
f^2*PolyLog[4, (-I)*E^(2*(a + b*x))] - 6*b*f^3*x*PolyLog[4, (-I)*E^(2*(a +
b*x))] + 6*b*e*f^2*PolyLog[4, I*E^(2*(a + b*x))] + 6*b*f^3*x*PolyLog[4, I*E
^(2*(a + b*x))] + 3*f^3*PolyLog[5, (-I)*E^(2*(a + b*x))] - 3*f^3*PolyLog[5,
 I*E^(2*(a + b*x))]))/b^4
```

fricas [**C**] time = 0.97, size = 1448, normalized size = 4.84

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*arccot(tanh(b*x+a)),x, algorithm="fricas")
```

```
[Out] 1/8*(-24*I*f^3*polylog(5, 1/2*sqrt(4*I)*(cosh(b*x + a) + sinh(b*x + a))) -
24*I*f^3*polylog(5, -1/2*sqrt(4*I)*(cosh(b*x + a) + sinh(b*x + a))) + 24*I*
f^3*polylog(5, 1/2*sqrt(-4*I)*(cosh(b*x + a) + sinh(b*x + a))) + 24*I*f^3*p
olylog(5, -1/2*sqrt(-4*I)*(cosh(b*x + a) + sinh(b*x + a))) + 2*(b^4*f^3*x^4
 + 4*b^4*e*f^2*x^3 + 6*b^4*e^2*f*x^2 + 4*b^4*e^3*x)*arctan(cosh(b*x + a)/si
nh(b*x + a)) + (4*I*b^3*f^3*x^3 + 12*I*b^3*e*f^2*x^2 + 12*I*b^3*e^2*f*x + 4
*I*b^3*e^3)*dilog(1/2*sqrt(4*I)*(cosh(b*x + a) + sinh(b*x + a))) + (4*I*b^3
*f^3*x^3 + 12*I*b^3*e*f^2*x^2 + 12*I*b^3*e^2*f*x + 4*I*b^3*e^3)*dilog(-1/2*
sqrt(4*I)*(cosh(b*x + a) + sinh(b*x + a))) + (-4*I*b^3*f^3*x^3 - 12*I*b^3*e
*f^2*x^2 - 12*I*b^3*e^2*f*x - 4*I*b^3*e^3)*dilog(1/2*sqrt(-4*I)*(cosh(b*x +
 a) + sinh(b*x + a))) + (-4*I*b^3*f^3*x^3 - 12*I*b^3*e*f^2*x^2 - 12*I*b^3*e
^2*f*x - 4*I*b^3*e^3)*dilog(-1/2*sqrt(-4*I)*(cosh(b*x + a) + sinh(b*x + a))
) + (I*b^4*f^3*x^4 + 4*I*b^4*e*f^2*x^3 + 6*I*b^4*e^2*f*x^2 + 4*I*b^4*e^3*x
+ 4*I*a*b^3*e^3 - 6*I*a^2*b^2*e^2*f + 4*I*a^3*b*e*f^2 - I*a^4*f^3)*log(1/2*
sqrt(4*I)*(cosh(b*x + a) + sinh(b*x + a)) + 1) + (I*b^4*f^3*x^4 + 4*I*b^4*e
*f^2*x^3 + 6*I*b^4*e^2*f*x^2 + 4*I*b^4*e^3*x + 4*I*a*b^3*e^3 - 6*I*a^2*b^2*
e^2*f + 4*I*a^3*b*e*f^2 - I*a^4*f^3)*log(-1/2*sqrt(4*I)*(cosh(b*x + a) + si
nh(b*x + a)) + 1) + (-I*b^4*f^3*x^4 - 4*I*b^4*e*f^2*x^3 - 6*I*b^4*e^2*f*x^2
 - 4*I*b^4*e^3*x - 4*I*a*b^3*e^3 + 6*I*a^2*b^2*e^2*f - 4*I*a^3*b*e*f^2 + I*
a^4*f^3)*log(1/2*sqrt(-4*I)*(cosh(b*x + a) + sinh(b*x + a)) + 1) + (-I*b^4*
f^3*x^4 - 4*I*b^4*e*f^2*x^3 - 6*I*b^4*e^2*f*x^2 - 4*I*b^4*e^3*x - 4*I*a*b^3
*e^3 + 6*I*a^2*b^2*e^2*f - 4*I*a^3*b*e*f^2 + I*a^4*f^3)*log(-1/2*sqrt(-4*I)
*(cosh(b*x + a) + sinh(b*x + a)) + 1) + (-4*I*a*b^3*e^3 + 6*I*a^2*b^2*e^2*f
 - 4*I*a^3*b*e*f^2 + I*a^4*f^3)*log(I*sqrt(4*I) + 2*cosh(b*x + a) + 2*sinh(
b*x + a)) + (-4*I*a*b^3*e^3 + 6*I*a^2*b^2*e^2*f - 4*I*a^3*b*e*f^2 + I*a^4*f
^3)*log(-I*sqrt(4*I) + 2*cosh(b*x + a) + 2*sinh(b*x + a)) + (4*I*a*b^3*e^3
- 6*I*a^2*b^2*e^2*f + 4*I*a^3*b*e*f^2 - I*a^4*f^3)*log(I*sqrt(-4*I) + 2*cos
h(b*x + a) + 2*sinh(b*x + a)) + (4*I*a*b^3*e^3 - 6*I*a^2*b^2*e^2*f + 4*I*a^
3*b*e*f^2 - I*a^4*f^3)*log(-I*sqrt(-4*I) + 2*cosh(b*x + a) + 2*sinh(b*x + a
)) + (24*I*b*f^3*x + 24*I*b*e*f^2)*polylog(4, 1/2*sqrt(4*I)*(cosh(b*x + a)
+ sinh(b*x + a))) + (24*I*b*f^3*x + 24*I*b*e*f^2)*polylog(4, -1/2*sqrt(4*I)
*(cosh(b*x + a) + sinh(b*x + a))) + (-24*I*b*f^3*x - 24*I*b*e*f^2)*polylog(
4, 1/2*sqrt(-4*I)*(cosh(b*x + a) + sinh(b*x + a))) + (-24*I*b*f^3*x - 24*I*
b*e*f^2)*polylog(4, -1/2*sqrt(-4*I)*(cosh(b*x + a) + sinh(b*x + a))) + (-12
*I*b^2*f^3*x^2 - 24*I*b^2*e*f^2*x - 12*I*b^2*e^2*f)*polylog(3, 1/2*sqrt(4*I
)*(cosh(b*x + a) + sinh(b*x + a))) + (-12*I*b^2*f^3*x^2 - 24*I*b^2*e*f^2*x
- 12*I*b^2*e^2*f)*polylog(3, -1/2*sqrt(4*I)*(cosh(b*x + a) + sinh(b*x + a))
) + (12*I*b^2*f^3*x^2 + 24*I*b^2*e*f^2*x + 12*I*b^2*e^2*f)*polylog(3, 1/2*s
qrt(-4*I)*(cosh(b*x + a) + sinh(b*x + a))) + (12*I*b^2*f^3*x^2 + 24*I*b^2*e
*f^2*x + 12*I*b^2*e^2*f)*polylog(3, -1/2*sqrt(-4*I)*(cosh(b*x + a) + sinh(b
*x + a))))/b^4
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*arccot(tanh(b*x+a)),x, algorithm="giac")
[Out] Timed out
```

maple [C] time = 48.50, size = 7275, normalized size = 24.33

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^3*arccot(tanh(b*x+a)),x)
[Out] result too large to display
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{4}\left(f^3x^4 + 4\,ef^2x^3 + 6\,e^2fx^2 + 4\,e^3x\right)\arctan\left(e^{(2\,bx+2\,a)} + 1, e^{(2\,bx+2\,a)} - 1\right) + \int \frac{\left(bf^3x^4e^{(2\,a)} + 4\,bef^2x^3e^{(2\,a)} + 6\,be^2f\right.}{2\left(e^{(4\,bx+4\,a)} +\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*arccot(tanh(b*x+a)),x, algorithm="maxima")
[Out] 1/4*(f^3*x^4 + 4*e*f^2*x^3 + 6*e^2*f*x^2 + 4*e^3*x)*arctan2(e^(2*b*x + 2*a)
 + 1, e^(2*b*x + 2*a) - 1) + integrate(1/2*(b*f^3*x^4*e^(2*a) + 4*b*e*f^2*x
^3*e^(2*a) + 6*b*e^2*f*x^2*e^(2*a) + 4*b*e^3*x*e^(2*a))*e^(2*b*x)/(e^(4*b*x
 + 4*a) + 1), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \mathrm{acot}\left(\tanh\left(a + b\,x\right)\right)\,{\left(e + f\,x\right)}^3 \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(acot(tanh(a + b*x))*(e + f*x)^3,x)
[Out] int(acot(tanh(a + b*x))*(e + f*x)^3, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(e + fx\right)^{3} \operatorname{acot}{\left(\tanh{\left(a + bx \right)} \right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**3*acot(tanh(b*x+a)),x)
[Out] Integral((e + f*x)**3*acot(tanh(a + b*x)), x)
```

3.184 $\int (e+fx)^2 \cot^{-1}(\tanh(a+bx))\,dx$

Optimal. Leaf size=229

$$-\frac{if^2\text{Li}_4\left(-ie^{2a+2bx}\right)}{8b^3}+\frac{if^2\text{Li}_4\left(ie^{2a+2bx}\right)}{8b^3}+\frac{if(e+fx)\text{Li}_3\left(-ie^{2a+2bx}\right)}{4b^2}-\frac{if(e+fx)\text{Li}_3\left(ie^{2a+2bx}\right)}{4b^2}-\frac{i(e+fx)^2\text{Li}_2\left(-ie\right.}{4b}$$

```
[Out] 1/3*(f*x+e)^3*arccot(tanh(b*x+a))/f+1/3*(f*x+e)^3*arctan(exp(2*b*x+2*a))/f-
1/4*I*(f*x+e)^2*polylog(2,-I*exp(2*b*x+2*a))/b+1/4*I*(f*x+e)^2*polylog(2,I*
exp(2*b*x+2*a))/b+1/4*I*f*(f*x+e)*polylog(3,-I*exp(2*b*x+2*a))/b^2-1/4*I*f*
(f*x+e)*polylog(3,I*exp(2*b*x+2*a))/b^2-1/8*I*f^2*polylog(4,-I*exp(2*b*x+2*
a))/b^3+1/8*I*f^2*polylog(4,I*exp(2*b*x+2*a))/b^3
```

Rubi [A] time = 0.15, antiderivative size = 229, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 6, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.400, Rules used = {5184, 4180, 2531, 6609, 2282, 6589}

$$\frac{if(e+fx)\text{PolyLog}\left(3,-ie^{2a+2bx}\right)}{4b^2}-\frac{if(e+fx)\text{PolyLog}\left(3,ie^{2a+2bx}\right)}{4b^2}-\frac{if^2\text{PolyLog}\left(4,-ie^{2a+2bx}\right)}{8b^3}+\frac{if^2\text{PolyLog}\left(\right.}{8b^3}$$

Antiderivative was successfully verified.

```
[In] Int[(e + f*x)^2*ArcCot[Tanh[a + b*x]],x]
```

```
[Out] ((e + f*x)^3*ArcCot[Tanh[a + b*x]])/(3*f) + ((e + f*x)^3*ArcTan[E^(2*a + 2*
b*x)])/(3*f) - ((I/4)*(e + f*x)^2*PolyLog[2, (-I)*E^(2*a + 2*b*x)])/b + ((I
/4)*(e + f*x)^2*PolyLog[2, I*E^(2*a + 2*b*x)])/b + ((I/4)*f*(e + f*x)*PolyL
og[3, (-I)*E^(2*a + 2*b*x)])/b^2 - ((I/4)*f*(e + f*x)*PolyLog[3, I*E^(2*a +
 2*b*x)])/b^2 - ((I/8)*f^2*PolyLog[4, (-I)*E^(2*a + 2*b*x)])/b^3 + ((I/8)*f
^2*PolyLog[4, I*E^(2*a + 2*b*x)])/b^3
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 4180

```
Int[csc[(e_.) + Pi*(k_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_
))^(m_.), x_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)/E^(
I*k*Pi)])/(f*fz*I), x] + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1
 - E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x] + Dist[(d*m)/(f*fz*I), Int[(c +
d*x)^(m - 1)*Log[1 + E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x]) /; FreeQ[{c,
d, e, f, fz}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 5184

```
Int[ArcCot[Tanh[(a_.) + (b_.)*(x_)]]*((e_.) + (f_.)*(x_))^(m_.), x_Symbol]
:> Simp[((e + f*x)^(m + 1)*ArcCot[Tanh[a + b*x]])/(f*(m + 1)), x] + Dist[b/
```

```
(f*(m + 1)), Int[(e + f*x)^(m + 1)*Sech[2*a + 2*b*x], x], x] /; FreeQ[{a, b
, e, f}, x] && IGtQ[m, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6609

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[((e + f*x)^m*PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p])/(b*c*p*Log[F]), x] - Dist[(f*m)/(b*c*p*Log[F]), Int[(e + f*x)^
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
 d, e, f, n, p}, x] && GtQ[m, 0]
```

Rubi steps

$$\int (e+fx)^2\cot^{-1}(\tanh(a+bx))\,dx=\frac{(e+fx)^3\cot^{-1}(\tanh(a+bx))}{3f}+\frac{b\int (e+fx)^3\text{sech}(2a+2bx)\,dx}{3f}$$

$$=\frac{(e+fx)^3\cot^{-1}(\tanh(a+bx))}{3f}+\frac{(e+fx)^3\tan^{-1}\left(e^{2a+2bx}\right)}{3f}-\frac{1}{2}i\int (e+fx)^2$$

$$=\frac{(e+fx)^3\cot^{-1}(\tanh(a+bx))}{3f}+\frac{(e+fx)^3\tan^{-1}\left(e^{2a+2bx}\right)}{3f}-\frac{i(e+fx)^2\text{Li}_2\left(\right.}{4b}$$

$$=\frac{(e+fx)^3\cot^{-1}(\tanh(a+bx))}{3f}+\frac{(e+fx)^3\tan^{-1}\left(e^{2a+2bx}\right)}{3f}-\frac{i(e+fx)^2\text{Li}_2\left(\right.}{4b}$$

$$=\frac{(e+fx)^3\cot^{-1}(\tanh(a+bx))}{3f}+\frac{(e+fx)^3\tan^{-1}\left(e^{2a+2bx}\right)}{3f}-\frac{i(e+fx)^2\text{Li}_2\left(\right.}{4b}$$

$$=\frac{(e+fx)^3\cot^{-1}(\tanh(a+bx))}{3f}+\frac{(e+fx)^3\tan^{-1}\left(e^{2a+2bx}\right)}{3f}-\frac{i(e+fx)^2\text{Li}_2\left(\right.}{4b}$$

Mathematica [A] time = 0.21, size = 375, normalized size = 1.64

$$\frac{1}{3}x\left(3e^2+3efx+f^2x^2\right)\cot^{-1}(\tanh(a+bx))+\frac{i\left(12b^3e^2x\log\left(1-ie^{2(a+bx)}\right)-12b^3e^2x\log\left(1+ie^{2(a+bx)}\right)+12b^3efx^2\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(e + f*x)^2*ArcCot[Tanh[a + b*x]],x]
```

```
[Out] (x*(3*e^2 + 3*e*f*x + f^2*x^2)*ArcCot[Tanh[a + b*x]])/3 + ((I/24)*(12*b^3*e
^2*x*Log[1 - I*E^(2*(a + b*x))] + 12*b^3*e*f*x^2*Log[1 - I*E^(2*(a + b*x))]
 + 4*b^3*f^2*x^3*Log[1 - I*E^(2*(a + b*x))] - 12*b^3*e^2*x*Log[1 + I*E^(2*(
a + b*x))] - 12*b^3*e*f*x^2*Log[1 + I*E^(2*(a + b*x))] - 4*b^3*f^2*x^3*Log[
1 + I*E^(2*(a + b*x))] - 6*b^2*(e + f*x)^2*PolyLog[2, (-I)*E^(2*(a + b*x))]
 + 6*b^2*(e + f*x)^2*PolyLog[2, I*E^(2*(a + b*x))] + 6*b*e*f*PolyLog[3, (-I
)*E^(2*(a + b*x))] + 6*b*f^2*x*PolyLog[3, (-I)*E^(2*(a + b*x))] - 6*b*e*f*P
olyLog[3, I*E^(2*(a + b*x))] - 6*b*f^2*x*PolyLog[3, I*E^(2*(a + b*x))] - 3*
f^2*PolyLog[4, (-I)*E^(2*(a + b*x))] + 3*f^2*PolyLog[4, I*E^(2*(a + b*x))])
)/b^3
```

fricas [C] time = 0.78, size = 994, normalized size = 4.34

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*arccot(tanh(b*x+a)),x, algorithm="fricas")
```

```
[Out] 1/6*(6*I*f^2*polylog(4, 1/2*sqrt(4*I)*(cosh(b*x + a) + sinh(b*x + a))) + 6*
I*f^2*polylog(4, -1/2*sqrt(4*I)*(cosh(b*x + a) + sinh(b*x + a))) - 6*I*f^2*
polylog(4, 1/2*sqrt(-4*I)*(cosh(b*x + a) + sinh(b*x + a))) - 6*I*f^2*polylo
g(4, -1/2*sqrt(-4*I)*(cosh(b*x + a) + sinh(b*x + a))) + 2*(b^3*f^2*x^3 + 3*
b^3*e*f*x^2 + 3*b^3*e^2*x)*arctan(cosh(b*x + a)/sinh(b*x + a)) + (3*I*b^2*f
^2*x^2 + 6*I*b^2*e*f*x + 3*I*b^2*e^2)*dilog(1/2*sqrt(4*I)*(cosh(b*x + a) +
sinh(b*x + a))) + (3*I*b^2*f^2*x^2 + 6*I*b^2*e*f*x + 3*I*b^2*e^2)*dilog(-1/
2*sqrt(4*I)*(cosh(b*x + a) + sinh(b*x + a))) + (-3*I*b^2*f^2*x^2 - 6*I*b^2*
e*f*x - 3*I*b^2*e^2)*dilog(1/2*sqrt(-4*I)*(cosh(b*x + a) + sinh(b*x + a)))
+ (-3*I*b^2*f^2*x^2 - 6*I*b^2*e*f*x - 3*I*b^2*e^2)*dilog(-1/2*sqrt(-4*I)*(c
osh(b*x + a) + sinh(b*x + a))) + (I*b^3*f^2*x^3 + 3*I*b^3*e*f*x^2 + 3*I*b^3
*e^2*x + 3*I*a*b^2*e^2 - 3*I*a^2*b*e*f + I*a^3*f^2)*log(1/2*sqrt(4*I)*(cosh
(b*x + a) + sinh(b*x + a)) + 1) + (I*b^3*f^2*x^3 + 3*I*b^3*e*f*x^2 + 3*I*b^
3*e^2*x + 3*I*a*b^2*e^2 - 3*I*a^2*b*e*f + I*a^3*f^2)*log(-1/2*sqrt(4*I)*(co
sh(b*x + a) + sinh(b*x + a)) + 1) + (-I*b^3*f^2*x^3 - 3*I*b^3*e*f*x^2 - 3*I
*b^3*e^2*x - 3*I*a*b^2*e^2 + 3*I*a^2*b*e*f - I*a^3*f^2)*log(1/2*sqrt(-4*I)*
(cosh(b*x + a) + sinh(b*x + a)) + 1) + (-I*b^3*f^2*x^3 - 3*I*b^3*e*f*x^2 -
3*I*b^3*e^2*x - 3*I*a*b^2*e^2 + 3*I*a^2*b*e*f - I*a^3*f^2)*log(-1/2*sqrt(-4
*I)*(cosh(b*x + a) + sinh(b*x + a)) + 1) + (-3*I*a*b^2*e^2 + 3*I*a^2*b*e*f
- I*a^3*f^2)*log(I*sqrt(4*I) + 2*cosh(b*x + a) + 2*sinh(b*x + a)) + (-3*I*a
*b^2*e^2 + 3*I*a^2*b*e*f - I*a^3*f^2)*log(-I*sqrt(4*I) + 2*cosh(b*x + a) +
2*sinh(b*x + a)) + (3*I*a*b^2*e^2 - 3*I*a^2*b*e*f + I*a^3*f^2)*log(I*sqrt(-
4*I) + 2*cosh(b*x + a) + 2*sinh(b*x + a)) + (3*I*a*b^2*e^2 - 3*I*a^2*b*e*f
+ I*a^3*f^2)*log(-I*sqrt(-4*I) + 2*cosh(b*x + a) + 2*sinh(b*x + a)) + (-6*I
*b*f^2*x - 6*I*b*e*f)*polylog(3, 1/2*sqrt(4*I)*(cosh(b*x + a) + sinh(b*x +
a))) + (-6*I*b*f^2*x - 6*I*b*e*f)*polylog(3, -1/2*sqrt(4*I)*(cosh(b*x + a)
+ sinh(b*x + a))) + (6*I*b*f^2*x + 6*I*b*e*f)*polylog(3, 1/2*sqrt(-4*I)*(co
sh(b*x + a) + sinh(b*x + a))) + (6*I*b*f^2*x + 6*I*b*e*f)*polylog(3, -1/2*s
qrt(-4*I)*(cosh(b*x + a) + sinh(b*x + a))))/b^3
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*arccot(tanh(b*x+a)),x, algorithm="giac")
```

```
[Out] Timed out
```

maple [C] time = 40.64, size = 5425, normalized size = 23.69

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^2*arccot(tanh(b*x+a)),x)
```

```
[Out] result too large to display
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{3}\left(f^2x^3 + 3\,efx^2 + 3\,e^2x\right)\arctan\left(e^{(2\,bx+2\,a)} + 1, e^{(2\,bx+2\,a)} - 1\right) + \int \frac{2\left(bf^2x^3e^{(2\,a)} + 3\,befx^2e^{(2\,a)} + 3\,be^2xe^{(2\,a)}\right)e^{(2}}{3\left(e^{(4\,bx+4\,a)} + 1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*arccot(tanh(b*x+a)),x, algorithm="maxima")
```

```
[Out] 1/3*(f^2*x^3 + 3*e*f*x^2 + 3*e^2*x)*arctan2(e^(2*b*x + 2*a) + 1, e^(2*b*x +
 2*a) - 1) + integrate(2/3*(b*f^2*x^3*e^(2*a) + 3*b*e*f*x^2*e^(2*a) + 3*b*e
^2*x*e^(2*a))*e^(2*b*x)/(e^(4*b*x + 4*a) + 1), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \operatorname{acot}(\tanh(a+bx))\left(e+fx\right)^2 dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(acot(tanh(a + b*x))*(e + f*x)^2,x)
```

```
[Out] int(acot(tanh(a + b*x))*(e + f*x)^2, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(e+fx\right)^2 \operatorname{acot}(\tanh(a+bx))\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**2*acot(tanh(b*x+a)),x)
```

```
[Out] Integral((e + f*x)**2*acot(tanh(a + b*x)), x)
```

3.185 $\int (e+fx)\cot^{-1}(\tanh(a+bx))\,dx$

Optimal. Leaf size=159

$$\frac{if\mathrm{Li}_3\left(-ie^{2a+2bx}\right)}{8b^2}-\frac{if\mathrm{Li}_3\left(ie^{2a+2bx}\right)}{8b^2}-\frac{i(e+fx)\mathrm{Li}_2\left(-ie^{2a+2bx}\right)}{4b}+\frac{i(e+fx)\mathrm{Li}_2\left(ie^{2a+2bx}\right)}{4b}+\frac{(e+fx)^2\tan^{-1}\left(e^{2a+2bx}\right)}{2f}$$

```
[Out] 1/2*(f*x+e)^2*arccot(tanh(b*x+a))/f+1/2*(f*x+e)^2*arctan(exp(2*b*x+2*a))/f-
1/4*I*(f*x+e)*polylog(2,-I*exp(2*b*x+2*a))/b+1/4*I*(f*x+e)*polylog(2,I*exp(
2*b*x+2*a))/b+1/8*I*f*polylog(3,-I*exp(2*b*x+2*a))/b^2-1/8*I*f*polylog(3,I*
exp(2*b*x+2*a))/b^2
```

Rubi [A] time = 0.10, antiderivative size = 159, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.385, Rules used = {5184, 4180, 2531, 2282, 6589}

$$\frac{if\mathrm{PolyLog}\left(3,-ie^{2a+2bx}\right)}{8b^2}-\frac{if\mathrm{PolyLog}\left(3,ie^{2a+2bx}\right)}{8b^2}-\frac{i(e+fx)\mathrm{PolyLog}\left(2,-ie^{2a+2bx}\right)}{4b}+\frac{i(e+fx)\mathrm{PolyLog}\left(2,ie^{2\ldots}\right.}{4b}$$

Antiderivative was successfully verified.

```
[In] Int[(e + f*x)*ArcCot[Tanh[a + b*x]],x]
```

```
[Out] ((e + f*x)^2*ArcCot[Tanh[a + b*x]])/(2*f) + ((e + f*x)^2*ArcTan[E^(2*a + 2*
b*x)])/(2*f) - ((I/4)*(e + f*x)*PolyLog[2, (-I)*E^(2*a + 2*b*x)])/b + ((I/4
)*(e + f*x)*PolyLog[2, I*E^(2*a + 2*b*x)])/b + ((I/8)*f*PolyLog[3, (-I)*E^(
2*a + 2*b*x)])/b^2 - ((I/8)*f*PolyLog[3, I*E^(2*a + 2*b*x)])/b^2
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] && !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] && !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 4180

```
Int[csc[(e_.) + Pi*(k_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_
))^(m_.), x_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)/E^(
I*k*Pi)])/(f*fz*I), x] + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1
 - E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x] + Dist[(d*m)/(f*fz*I), Int[(c +
d*x)^(m - 1)*Log[1 + E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x]) /; FreeQ[{c,
d, e, f, fz}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 5184

```
Int[ArcCot[Tanh[(a_.) + (b_.)*(x_)]]*((e_.) + (f_.)*(x_))^(m_.), x_Symbol]
:> Simp[((e + f*x)^(m + 1)*ArcCot[Tanh[a + b*x]])/(f*(m + 1)), x] + Dist[b/
(f*(m + 1)), Int[(e + f*x)^(m + 1)*Sech[2*a + 2*b*x], x], x] /; FreeQ[{a, b
, e, f}, x] && IGtQ[m, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int (e+fx)\cot^{-1}(\tanh(a+bx))\,dx = \frac{(e+fx)^2\cot^{-1}(\tanh(a+bx))}{2f} + \frac{b\int (e+fx)^2\text{sech}(2a+2bx)\,dx}{2f}$$
$$= \frac{(e+fx)^2\cot^{-1}(\tanh(a+bx))}{2f} + \frac{(e+fx)^2\tan^{-1}\left(e^{2a+2bx}\right)}{2f} - \frac{1}{2}i\int (e+fx)\,\text{lo}$$
$$= \frac{(e+fx)^2\cot^{-1}(\tanh(a+bx))}{2f} + \frac{(e+fx)^2\tan^{-1}\left(e^{2a+2bx}\right)}{2f} - \frac{i(e+fx)\text{Li}_2\left(-\right.}{4b}$$
$$= \frac{(e+fx)^2\cot^{-1}(\tanh(a+bx))}{2f} + \frac{(e+fx)^2\tan^{-1}\left(e^{2a+2bx}\right)}{2f} - \frac{i(e+fx)\text{Li}_2\left(-\right.}{4b}$$
$$= \frac{(e+fx)^2\cot^{-1}(\tanh(a+bx))}{2f} + \frac{(e+fx)^2\tan^{-1}\left(e^{2a+2bx}\right)}{2f} - \frac{i(e+fx)\text{Li}_2\left(-\right.}{4b}$$

Mathematica [A] time = 0.24, size = 278, normalized size = 1.75

$$\frac{if\left(2b^2x^2\log\left(1-ie^{2(a+bx)}\right)-2b^2x^2\log\left(1+ie^{2(a+bx)}\right)-2bx\text{Li}_2\left(-ie^{2(a+bx)}\right)+2bx\text{Li}_2\left(ie^{2(a+bx)}\right)+\text{Li}_3\left(-ie^{2(a+bx)}\right)\right.}{8b^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(e + f*x)*ArcCot[Tanh[a + b*x]],x]
```

```
[Out] e*x*ArcCot[Tanh[a + b*x]] + (f*x^2*ArcCot[Tanh[a + b*x]])/2 + (e*(-(((-4*I)
*a + Pi - (4*I)*b*x)*(Log[1 - I*E^(2*(a + b*x))] - Log[1 + I*E^(2*(a + b*x)
)])) + ((-4*I)*a + Pi)*Log[Cot[((4*I)*a + Pi + (4*I)*b*x)/4]] - (2*I)*(Poly
Log[2, (-I)*E^(2*(a + b*x))] - PolyLog[2, I*E^(2*(a + b*x))])))/(8*b) + ((I
/8)*f*(2*b^2*x^2*Log[1 - I*E^(2*(a + b*x))] - 2*b^2*x^2*Log[1 + I*E^(2*(a +
 b*x))] - 2*b*x*PolyLog[2, (-I)*E^(2*(a + b*x))] + 2*b*x*PolyLog[2, I*E^(2*
(a + b*x))] + PolyLog[3, (-I)*E^(2*(a + b*x))] - PolyLog[3, I*E^(2*(a + b*x
))]))/b^2
```

fricas [C] time = 0.84, size = 596, normalized size = 3.75

$$\frac{2\left(b^2fx^2+2\,b^2ex\right)\arctan\left(\frac{\cosh(bx+a)}{\sinh(bx+a)}\right)+\left(2i\,bfx+2i\,be\right)\text{Li}_2\left(\frac{1}{2}\sqrt{4i}\left(\cosh\left(bx+a\right)+\sinh\left(bx+a\right)\right)\right)+\left(2i\,bfx+2\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*arccot(tanh(b*x+a)),x, algorithm="fricas")
```

```
[Out] 1/4*(2*(b^2*f*x^2 + 2*b^2*e*x)*arctan(cosh(b*x + a)/sinh(b*x + a)) + (2*I*b
*f*x + 2*I*b*e)*dilog(1/2*sqrt(4*I)*(cosh(b*x + a) + sinh(b*x + a))) + (2*I
*b*f*x + 2*I*b*e)*dilog(-1/2*sqrt(4*I)*(cosh(b*x + a) + sinh(b*x + a))) + (
-2*I*b*f*x - 2*I*b*e)*dilog(1/2*sqrt(-4*I)*(cosh(b*x + a) + sinh(b*x + a)))
 + (-2*I*b*f*x - 2*I*b*e)*dilog(-1/2*sqrt(-4*I)*(cosh(b*x + a) + sinh(b*x +
 a))) + (I*b^2*f*x^2 + 2*I*b^2*e*x + 2*I*a*b*e - I*a^2*f)*log(1/2*sqrt(4*I)
*(cosh(b*x + a) + sinh(b*x + a)) + 1) + (I*b^2*f*x^2 + 2*I*b^2*e*x + 2*I*a*
b*e - I*a^2*f)*log(-1/2*sqrt(4*I)*(cosh(b*x + a) + sinh(b*x + a)) + 1) + (-
```

```
I*b^2*f*x^2 - 2*I*b^2*e*x - 2*I*a*b*e + I*a^2*f)*log(1/2*sqrt(-4*I)*(cosh(b
*x + a) + sinh(b*x + a)) + 1) + (-I*b^2*f*x^2 - 2*I*b^2*e*x - 2*I*a*b*e + I
*a^2*f)*log(-1/2*sqrt(-4*I)*(cosh(b*x + a) + sinh(b*x + a)) + 1) + (-2*I*a*
b*e + I*a^2*f)*log(I*sqrt(4*I) + 2*cosh(b*x + a) + 2*sinh(b*x + a)) + (-2*I
*a*b*e + I*a^2*f)*log(-I*sqrt(4*I) + 2*cosh(b*x + a) + 2*sinh(b*x + a)) + (
2*I*a*b*e - I*a^2*f)*log(I*sqrt(-4*I) + 2*cosh(b*x + a) + 2*sinh(b*x + a))
+ (2*I*a*b*e - I*a^2*f)*log(-I*sqrt(-4*I) + 2*cosh(b*x + a) + 2*sinh(b*x +
a)) - 2*I*f*polylog(3, 1/2*sqrt(4*I)*(cosh(b*x + a) + sinh(b*x + a))) - 2*I
*f*polylog(3, -1/2*sqrt(4*I)*(cosh(b*x + a) + sinh(b*x + a))) + 2*I*f*polyl
og(3, 1/2*sqrt(-4*I)*(cosh(b*x + a) + sinh(b*x + a))) + 2*I*f*polylog(3, -1
/2*sqrt(-4*I)*(cosh(b*x + a) + sinh(b*x + a))))/b^2
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$sage_0x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*arccot(tanh(b*x+a)),x, algorithm="giac")
```

```
[Out] sage0*x
```

maple [C] time = 5.13, size = 2688, normalized size = 16.91

Expression too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)*arccot(tanh(b*x+a)),x)
```

```
[Out] -1/8*Pi*x^2*f*csgn((1+I)*(exp(2*b*x+2*a)+I)/(exp(2*b*x+2*a)+1))^3+1/4*Pi*x*
e*csgn(I*(exp(2*b*x+2*a)-I)/(exp(2*b*x+2*a)+1))^3-1/8*I*f*polylog(3,I*exp(2
*b*x+2*a))/b^2-1/8*Pi*x^2*f*csgn(I*(exp(2*b*x+2*a)-I)/(exp(2*b*x+2*a)+1))*c
sgn((1-I)*(exp(2*b*x+2*a)-I)/(exp(2*b*x+2*a)+1))^2-1/4*Pi*x*e*csgn(I/(exp(2
*b*x+2*a)+1))*csgn(I*(exp(2*b*x+2*a)-I)/(exp(2*b*x+2*a)+1))^2+1/8*Pi*x^2*f*
csgn(I/(exp(2*b*x+2*a)+1))*csgn(I*(exp(2*b*x+2*a)+I)/(exp(2*b*x+2*a)+1))^2-
1/8*Pi*x^2*f*csgn(I*(exp(2*b*x+2*a)-I))*csgn(I*(exp(2*b*x+2*a)-I)/(exp(2*b*
x+2*a)+1))^2+1/8*Pi*x^2*f*csgn(I*(exp(2*b*x+2*a)+I))*csgn(I*(exp(2*b*x+2*a)
+I)/(exp(2*b*x+2*a)+1))^2+1/8*Pi*x^2*f*csgn((1+I)*(exp(2*b*x+2*a)+I)/(exp(2
*b*x+2*a)+1))^2+1/8*Pi*f*x^2+1/4*Pi*e*x+1/8*Pi*x^2*f*csgn((1-I)*(exp(2*b*x+
2*a)-I)/(exp(2*b*x+2*a)+1))^2+1/4*Pi*x*e*csgn((1-I)*(exp(2*b*x+2*a)-I)/(exp
(2*b*x+2*a)+1))^2+1/2*I*e/b*a*ln(-exp(2*b*x+2*a)+I)-1/2*I*e/b*dilog(1+exp(b
*x+a)*(-1)^(3/4))-1/2*I*e/b*dilog(1-exp(b*x+a)*(-1)^(3/4))+1/2*I/b*e*dilog(
((-I)^(1/2)-exp(b*x+a))/(-I)^(1/2))+1/2*I/b*e*dilog(((-I)^(1/2)+exp(b*x+a))
/(-I)^(1/2))-1/2*I/b*f*a*ln(((-I)^(1/2)-exp(b*x+a))/(-I)^(1/2))*x-1/2*I/b*f
*a*ln(((-I)^(1/2)+exp(b*x+a))/(-I)^(1/2))*x+1/2*I/b*f*ln(1-I*exp(2*b*x+2*a)
)*x*a+1/8*Pi*x^2*f*csgn(I*(exp(2*b*x+2*a)-I)/(exp(2*b*x+2*a)+1))^3-1/8*Pi*x
^2*f*csgn(I*(exp(2*b*x+2*a)+I)/(exp(2*b*x+2*a)+1))^3-1/8*Pi*x^2*f*csgn((1-I
)*(exp(2*b*x+2*a)-I)/(exp(2*b*x+2*a)+1))^3-1/4*Pi*x*e*csgn(I*(exp(2*b*x+2*a
)+I)/(exp(2*b*x+2*a)+1))^3-1/4*Pi*x*e*csgn((1-I)*(exp(2*b*x+2*a)-I)/(exp(2*
b*x+2*a)+1))^3-1/4*Pi*x*e*csgn((1+I)*(exp(2*b*x+2*a)+I)/(exp(2*b*x+2*a)+1))
^3-1/8*Pi*x^2*f*csgn(I/(exp(2*b*x+2*a)+1))*csgn(I*(exp(2*b*x+2*a)-I)/(exp(2
*b*x+2*a)+1))^2-1/4*I*f/b^2*a^2*ln(-exp(2*b*x+2*a)+I)+1/4*Pi*x*e*csgn((1+I)
*(exp(2*b*x+2*a)+I)/(exp(2*b*x+2*a)+1))^2+1/4*Pi*x*e*csgn(I*(exp(2*b*x+2*a)
+I)/(exp(2*b*x+2*a)+1))*csgn((1+I)*(exp(2*b*x+2*a)+I)/(exp(2*b*x+2*a)+1))^2
-1/4*Pi*x*e*csgn(I*(exp(2*b*x+2*a)-I)/(exp(2*b*x+2*a)+1))*csgn((1-I)*(exp(2
*b*x+2*a)-I)/(exp(2*b*x+2*a)+1))^2-1/2*I*(1/2*f*x^2+e*x)*ln(exp(2*b*x+2*a)+
I)+1/4*I*f*ln(1-I*exp(2*b*x+2*a))*x^2+1/2*I*ln(((-I)^(1/2)-exp(b*x+a))/(-I)
^(1/2))*x*e+1/2*I*ln(((-I)^(1/2)+exp(b*x+a))/(-I)^(1/2))*x*e-1/4*I*f*ln(1+I
*exp(2*b*x+2*a))*x^2-1/2*I*e*ln(1+exp(b*x+a)*(-1)^(3/4))*x-1/2*I*e*ln(1-exp
(b*x+a)*(-1)^(3/4))*x-1/8*Pi*x^2*f*csgn(I/(exp(2*b*x+2*a)+1))*csgn(I*(exp(2
*b*x+2*a)+I))*csgn(I*(exp(2*b*x+2*a)+I)/(exp(2*b*x+2*a)+1))+1/4*Pi*x*e*csgn
```

```
(I/(exp(2*b*x+2*a)+1))*csgn(I*(exp(2*b*x+2*a)-I))*csgn(I*(exp(2*b*x+2*a)-I)
/(exp(2*b*x+2*a)+1))-1/2*I*f/b*ln(1+I*exp(2*b*x+2*a))*x*a+1/2*I*f/b*a*ln(1+
exp(b*x+a)*(-1)^(3/4))*x+1/2*I*f/b*a*ln(1-exp(b*x+a)*(-1)^(3/4))*x-1/2*I/b^
2*f*a^2*ln(((-I)^(1/2)-exp(b*x+a))/(-I)^(1/2))-1/2*I/b^2*f*a^2*ln(((-I)^(1/
2)+exp(b*x+a))/(-I)^(1/2))-1/4*I*f/b*polylog(2,-I*exp(2*b*x+2*a))*x-1/4*I*f
/b^2*polylog(2,-I*exp(2*b*x+2*a))*a-1/2*I*e/b*ln(1+exp(b*x+a)*(-1)^(3/4))*a
-1/2*I*e/b*ln(1-exp(b*x+a)*(-1)^(3/4))*a+1/2*I*f/b^2*a^2*ln(1+exp(b*x+a)*(-
1)^(3/4))-1/2*I/b^2*f*a*dilog(((-I)^(1/2)+exp(b*x+a))/(-I)^(1/2))+1/2*I*f/b
^2*a*dilog(1+exp(b*x+a)*(-1)^(3/4))+1/2*I*f/b^2*a*dilog(1-exp(b*x+a)*(-1)^(
3/4))-1/2*I/b^2*f*a*dilog(((-I)^(1/2)-exp(b*x+a))/(-I)^(1/2))+1/4*I*ln(exp(
2*b*x+2*a)-I)*f*x^2+1/2*I*ln(exp(2*b*x+2*a)-I)*e*x+1/2*I*f/b^2*a^2*ln(1-exp
(b*x+a)*(-1)^(3/4))-1/4*I*f/b^2*ln(1+I*exp(2*b*x+2*a))*a^2+1/4*I/b^2*f*ln(1
-I*exp(2*b*x+2*a))*a^2+1/4*I/b^2*f*polylog(2,I*exp(2*b*x+2*a))*a+1/2*I/b*ln
(((-I)^(1/2)-exp(b*x+a))/(-I)^(1/2))*a*e+1/2*I/b*ln(((-I)^(1/2)+exp(b*x+a))
/(-I)^(1/2))*a*e+1/4*I/b*f*polylog(2,I*exp(2*b*x+2*a))*x-1/4*Pi*x*e*csgn(I/
(exp(2*b*x+2*a)+1))*csgn(I*(exp(2*b*x+2*a)+I))*csgn(I*(exp(2*b*x+2*a)+I)/(e
xp(2*b*x+2*a)+1))+1/8*Pi*x^2*f*csgn(I/(exp(2*b*x+2*a)+1))*csgn(I*(exp(2*b*x
+2*a)-I))*csgn(I*(exp(2*b*x+2*a)-I)/(exp(2*b*x+2*a)+1))+1/4*Pi*x*e*csgn(I/(
exp(2*b*x+2*a)+1))*csgn(I*(exp(2*b*x+2*a)+I)/(exp(2*b*x+2*a)+1))^2-1/4*Pi*x
*e*csgn(I*(exp(2*b*x+2*a)-I))*csgn(I*(exp(2*b*x+2*a)-I)/(exp(2*b*x+2*a)+1))
^2+1/4*Pi*x*e*csgn(I*(exp(2*b*x+2*a)+I))*csgn(I*(exp(2*b*x+2*a)+I)/(exp(2*b
*x+2*a)+1))^2+1/8*Pi*x^2*f*csgn(I*(exp(2*b*x+2*a)+I)/(exp(2*b*x+2*a)+1))*cs
gn((1+I)*(exp(2*b*x+2*a)+I)/(exp(2*b*x+2*a)+1))^2-1/4*Pi*x*e*csgn(I*(exp(2*
b*x+2*a)+I)/(exp(2*b*x+2*a)+1))*csgn((1+I)*(exp(2*b*x+2*a)+I)/(exp(2*b*x+2*
a)+1))+1/8*Pi*x^2*f*csgn(I*(exp(2*b*x+2*a)-I)/(exp(2*b*x+2*a)+1))*csgn((1-I
)*(exp(2*b*x+2*a)-I)/(exp(2*b*x+2*a)+1))-1/8*Pi*x^2*f*csgn(I*(exp(2*b*x+2*a
)+I)/(exp(2*b*x+2*a)+1))*csgn((1+I)*(exp(2*b*x+2*a)+I)/(exp(2*b*x+2*a)+1))+
1/4*Pi*x*e*csgn(I*(exp(2*b*x+2*a)-I)/(exp(2*b*x+2*a)+1))*csgn((1-I)*(exp(2*
b*x+2*a)-I)/(exp(2*b*x+2*a)+1))-1/2*I/b*a*e*ln(exp(2*b*x+2*a)+I)+1/4*I/b^2*
f*a^2*ln(exp(2*b*x+2*a)+I)+1/8*I*f*polylog(3,-I*exp(2*b*x+2*a))/b^2
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{2}\left(fx^2+2\,ex\right)\arctan\left(e^{(2\,bx+2\,a)}+1,e^{(2\,bx+2\,a)}-1\right)+\int\frac{\left(bfx^2e^{(2\,a)}+2\,bexe^{(2\,a)}\right)e^{(2\,bx)}}{e^{(4\,bx+4\,a)}+1}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*arccot(tanh(b*x+a)),x, algorithm="maxima")
```

```
[Out] 1/2*(f*x^2 + 2*e*x)*arctan2(e^(2*b*x + 2*a) + 1, e^(2*b*x + 2*a) - 1) + int
egrate((b*f*x^2*e^(2*a) + 2*b*e*x*e^(2*a))*e^(2*b*x)/(e^(4*b*x + 4*a) + 1),
 x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \mathrm{acot}\left(\tanh\left(a+b\,x\right)\right)\,\left(e+f\,x\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(acot(tanh(a + b*x))*(e + f*x),x)
```

```
[Out] int(acot(tanh(a + b*x))*(e + f*x), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\left(e+fx\right)\operatorname{acot}\left(\tanh\left(a+bx\right)\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*acot(tanh(b*x+a)),x)
```

```
[Out] Integral((e + f*x)*acot(tanh(a + b*x)), x)
```

3.186 $\int \cot^{-1}(\tanh(a+bx))\,dx$

Optimal. Leaf size=73

$$-\frac{i\text{Li}_2\left(-ie^{2a+2bx}\right)}{4b}+\frac{i\text{Li}_2\left(ie^{2a+2bx}\right)}{4b}+x\tan^{-1}\left(e^{2a+2bx}\right)+x\cot^{-1}(\tanh(a+bx))$$

```
[Out] x*arccot(tanh(b*x+a))+x*arctan(exp(2*b*x+2*a))-1/4*I*polylog(2,-I*exp(2*b*x
+2*a))/b+1/4*I*polylog(2,I*exp(2*b*x+2*a))/b
```

Rubi [A] time = 0.04, antiderivative size = 73, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 7, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.571, Rules used = {5180, 4180, 2279, 2391}

$$-\frac{i\text{PolyLog}\left(2,-ie^{2a+2bx}\right)}{4b}+\frac{i\text{PolyLog}\left(2,ie^{2a+2bx}\right)}{4b}+x\tan^{-1}\left(e^{2a+2bx}\right)+x\cot^{-1}(\tanh(a+bx))$$

Antiderivative was successfully verified.

```
[In] Int[ArcCot[Tanh[a + b*x]],x]
```

```
[Out] x*ArcCot[Tanh[a + b*x]] + x*ArcTan[E^(2*a + 2*b*x)] - ((I/4)*PolyLog[2, (-I
)*E^(2*a + 2*b*x)])/b + ((I/4)*PolyLog[2, I*E^(2*a + 2*b*x)])/b
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 4180

```
Int[csc[(e_.) + Pi*(k_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_
))^(m_.), x_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)/E^(
I*k*Pi)])/(f*fz*I), x] + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1
 - E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x] + Dist[(d*m)/(f*fz*I), Int[(c +
d*x)^(m - 1)*Log[1 + E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x]) /; FreeQ[{c,
d, e, f, fz}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 5180

```
Int[ArcCot[Tanh[(a_.) + (b_.)*(x_)]], x_Symbol] :> Simp[x*ArcCot[Tanh[a + b
*x]], x] + Dist[b, Int[x*Sech[2*a + 2*b*x], x], x] /; FreeQ[{a, b}, x]
```

Rubi steps

$$\begin{aligned}\int \cot^{-1}(\tanh(a+bx))\,dx &= x\cot^{-1}(\tanh(a+bx))+b\int x\text{sech}(2a+2bx)\,dx\\
&= x\cot^{-1}(\tanh(a+bx))+x\tan^{-1}\left(e^{2a+2bx}\right)-\frac{1}{2}i\int \log\left(1-ie^{2a+2bx}\right)\,dx+\frac{1}{2}i\int \log\\
&= x\cot^{-1}(\tanh(a+bx))+x\tan^{-1}\left(e^{2a+2bx}\right)-\frac{i\,\text{Subst}\left(\int \frac{\log(1-ix)}{x}\,dx,x,e^{2a+2bx}\right)}{4b}+\frac{i}{}\\
&= x\cot^{-1}(\tanh(a+bx))+x\tan^{-1}\left(e^{2a+2bx}\right)-\frac{i\text{Li}_2\left(-ie^{2a+2bx}\right)}{4b}+\frac{i\text{Li}_2\left(ie^{2a+2bx}\right)}{4b}\end{aligned}$$

Mathematica [A] time = 0.06, size = 132, normalized size = 1.81

$$x\cot^{-1}(\tanh(a+bx))+\frac{-2i\left(\text{Li}_2\left(-ie^{2(a+bx)}\right)-\text{Li}_2\left(ie^{2(a+bx)}\right)\right)-\left((-4ia-4ibx+\pi)\left(\log\left(1-ie^{2(a+bx)}\right)-\log\left(1+ie^{2(a+bx)}\right)\right)\right.}{8b}$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcCot[Tanh[a + b*x]],x]
```

```
[Out] x*ArcCot[Tanh[a + b*x]] + (-(((-4*I)*a + Pi - (4*I)*b*x)*(Log[1 - I*E^(2*(a
 + b*x))] - Log[1 + I*E^(2*(a + b*x))])) + ((-4*I)*a + Pi)*Log[Cot[((4*I)*a
 + Pi + (4*I)*b*x)/4]] - (2*I)*(PolyLog[2, (-I)*E^(2*(a + b*x))] - PolyLog[
2, I*E^(2*(a + b*x))]))/(8*b)
```

fricas [B] time = 0.60, size = 334, normalized size = 4.58

$$\frac{2\,bx\arctan\left(\frac{\cosh(bx+a)}{\sinh(bx+a)}\right)+(i\,bx+i\,a)\log\left(\frac{1}{2}\,\sqrt{4i}\,(\cosh(bx+a)+\sinh(bx+a))+1\right)+(i\,bx+i\,a)\log\left(-\frac{1}{2}\,\sqrt{4i}\,(\cosh\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(tanh(b*x+a)),x, algorithm="fricas")
```

```
[Out] 1/2*(2*b*x*arctan(cosh(b*x + a)/sinh(b*x + a)) + (I*b*x + I*a)*log(1/2*sqrt
(4*I)*(cosh(b*x + a) + sinh(b*x + a)) + 1) + (I*b*x + I*a)*log(-1/2*sqrt(4*
I)*(cosh(b*x + a) + sinh(b*x + a)) + 1) + (-I*b*x - I*a)*log(1/2*sqrt(-4*I)
*(cosh(b*x + a) + sinh(b*x + a)) + 1) + (-I*b*x - I*a)*log(-1/2*sqrt(-4*I)*
(cosh(b*x + a) + sinh(b*x + a)) + 1) - I*a*log(I*sqrt(4*I) + 2*cosh(b*x + a
) + 2*sinh(b*x + a)) - I*a*log(-I*sqrt(4*I) + 2*cosh(b*x + a) + 2*sinh(b*x
+ a)) + I*a*log(I*sqrt(-4*I) + 2*cosh(b*x + a) + 2*sinh(b*x + a)) + I*a*log
(-I*sqrt(-4*I) + 2*cosh(b*x + a) + 2*sinh(b*x + a)) + I*dilog(1/2*sqrt(4*I)
*(cosh(b*x + a) + sinh(b*x + a))) + I*dilog(-1/2*sqrt(4*I)*(cosh(b*x + a) +
 sinh(b*x + a))) - I*dilog(1/2*sqrt(-4*I)*(cosh(b*x + a) + sinh(b*x + a)))
- I*dilog(-1/2*sqrt(-4*I)*(cosh(b*x + a) + sinh(b*x + a))))/b
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \operatorname{arccot}\left(\tanh\left(bx+a\right)\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(tanh(b*x+a)),x, algorithm="giac")
```

```
[Out] integrate(arccot(tanh(b*x + a)), x)
```

maple [B] time = 0.62, size = 198, normalized size = 2.71

$$\frac{\operatorname{arctanh}\left(\tanh\left(bx+a\right)\right)\operatorname{arccot}\left(\tanh\left(bx+a\right)\right)}{b}+\frac{\arctan\left(\tanh\left(bx+a\right)\right)\operatorname{arctanh}\left(\tanh\left(bx+a\right)\right)}{b}+\frac{\arctan\left(\tanh\left(b\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arccot(tanh(b*x+a)),x)
```

```
[Out] 1/b*arctanh(tanh(b*x+a))*arccot(tanh(b*x+a))+1/b*arctan(tanh(b*x+a))*arctan
h(tanh(b*x+a))+1/2/b*arctan(tanh(b*x+a))*ln(1+I*(1+I*tanh(b*x+a))^2/(tanh(b
*x+a)^2+1))-1/2/b*arctan(tanh(b*x+a))*ln(1-I*(1+I*tanh(b*x+a))^2/(tanh(b*x+
a)^2+1))-1/4*I/b*dilog(1+I*(1+I*tanh(b*x+a))^2/(tanh(b*x+a)^2+1))+1/4*I/b*d
ilog(1-I*(1+I*tanh(b*x+a))^2/(tanh(b*x+a)^2+1))
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$x \arctan\left(e^{(2\,bx+2\,a)} + 1, e^{(2\,bx+2\,a)} - 1\right) + 2\,b\int \frac{xe^{(2\,bx+2\,a)}}{e^{(4\,bx+4\,a)} + 1}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(tanh(b*x+a)),x, algorithm="maxima")
```

```
[Out] x*arctan2(e^(2*b*x + 2*a) + 1, e^(2*b*x + 2*a) - 1) + 2*b*integrate(x*e^(2*
b*x + 2*a)/(e^(4*b*x + 4*a) + 1), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \operatorname{acot}\left(\tanh\left(a + b\,x\right)\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(acot(tanh(a + b*x)),x)
```

```
[Out] int(acot(tanh(a + b*x)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \operatorname{acot}\left(\tanh\left(a + bx\right)\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(acot(tanh(b*x+a)),x)
```

```
[Out] Integral(acot(tanh(a + b*x)), x)
```

3.187 $\int \frac{\cot^{-1}(\tanh(a+bx))}{e+fx} dx$

Optimal. Leaf size=18

$$\text{Int}\left(\frac{\cot^{-1}(\tanh(a+bx))}{e+fx},x\right)$$

```
[Out] CannotIntegrate(arccot(tanh(b*x+a))/(f*x+e),x)
```

Rubi [A] time = 0.04, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\cot^{-1}(\tanh(a+bx))}{e+fx} dx$$

Verification is Not applicable to the result.

```
[In] Int[ArcCot[Tanh[a + b*x]]/(e + f*x),x]
[Out] Defer[Int][ArcCot[Tanh[a + b*x]]/(e + f*x), x]
```

Rubi steps

$$\int \frac{\cot^{-1}(\tanh(a+bx))}{e+fx} dx = \int \frac{\cot^{-1}(\tanh(a+bx))}{e+fx} dx$$

Mathematica [A] time = 4.31, size = 0, normalized size = 0.00

$$\int \frac{\cot^{-1}(\tanh(a+bx))}{e+fx} dx$$

Verification is Not applicable to the result.

```
[In] Integrate[ArcCot[Tanh[a + b*x]]/(e + f*x),x]
[Out] Integrate[ArcCot[Tanh[a + b*x]]/(e + f*x), x]
```

fricas [A] time = 0.77, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\text{arccot}(\tanh(bx+a))}{fx+e},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(tanh(b*x+a))/(f*x+e),x, algorithm="fricas")
[Out] integral(arccot(tanh(b*x + a))/(f*x + e), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$sage_0x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(tanh(b*x+a))/(f*x+e),x, algorithm="giac")
[Out] sage0*x
```

maple [A] time = 2.68, size = 0, normalized size = 0.00

$$\int \frac{\text{arccot}(\tanh(bx+a))}{fx+e} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arccot(tanh(b*x+a))/(f*x+e),x)
[Out] int(arccot(tanh(b*x+a))/(f*x+e),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{arccot}(\tanh(bx+a))}{fx+e}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(tanh(b*x+a))/(f*x+e),x, algorithm="maxima")
[Out] integrate(arccot(tanh(b*x + a))/(f*x + e), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.06

$$\int \frac{\operatorname{acot}(\tanh(a+b\,x))}{e+f\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(acot(tanh(a + b*x))/(e + f*x),x)
[Out] int(acot(tanh(a + b*x))/(e + f*x), x)
```

sympy [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{acot}(\tanh(a+bx))}{e+fx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(acot(tanh(b*x+a))/(f*x+e),x)
[Out] Integral(acot(tanh(a + b*x))/(e + f*x), x)
```

3.188 $\int x^2 \cot^{-1}(c + d\tanh(a + bx))\,dx$

Optimal. Leaf size=355

$$-\frac{i\text{Li}_4\left(-\frac{(-c-d+i)e^{2a+2bx}}{-c+d+i}\right)}{8b^3}+\frac{i\text{Li}_4\left(-\frac{(c+d+i)e^{2a+2bx}}{c-d+i}\right)}{8b^3}+\frac{ix\text{Li}_3\left(-\frac{(-c-d+i)e^{2a+2bx}}{-c+d+i}\right)}{4b^2}-\frac{ix\text{Li}_3\left(-\frac{(c+d+i)e^{2a+2bx}}{c-d+i}\right)}{4b^2}-\frac{ix^2\text{Li}_2\left(-\frac{(-c-d+i)e^{2a+}}{-c+d+i}\right.}{4b}$$

```
[Out] 1/3*x^3*arccot(c+d*tanh(b*x+a))-1/6*I*x^3*ln(1+(I-c-d)*exp(2*b*x+2*a)/(I-c+
d))+1/6*I*x^3*ln(1+(I+c+d)*exp(2*b*x+2*a)/(I+c-d))-1/4*I*x^2*polylog(2,-(I-
c-d)*exp(2*b*x+2*a)/(I-c+d))/b+1/4*I*x^2*polylog(2,-(I+c+d)*exp(2*b*x+2*a)/
(I+c-d))/b+1/4*I*x*polylog(3,-(I-c-d)*exp(2*b*x+2*a)/(I-c+d))/b^2-1/4*I*x*p
olylog(3,-(I+c+d)*exp(2*b*x+2*a)/(I+c-d))/b^2-1/8*I*polylog(4,-(I-c-d)*exp(
2*b*x+2*a)/(I-c+d))/b^3+1/8*I*polylog(4,-(I+c+d)*exp(2*b*x+2*a)/(I+c-d))/b^
3
```

Rubi [A] time = 0.46, antiderivative size = 355, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 6, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.400, Rules used = {5200, 2190, 2531, 6609, 2282, 6589}

$$\frac{ix\text{PolyLog}\left(3,-\frac{(-c-d+i)e^{2a+2bx}}{-c+d+i}\right)}{4b^2}-\frac{ix\text{PolyLog}\left(3,-\frac{(c+d+i)e^{2a+2bx}}{c-d+i}\right)}{4b^2}-\frac{i\text{PolyLog}\left(4,-\frac{(-c-d+i)e^{2a+2bx}}{-c+d+i}\right)}{8b^3}+\frac{i\text{PolyLog}\left(4,-\frac{(c+}{}\right.}{8b^3}$$

Antiderivative was successfully verified.

```
[In] Int[x^2*ArcCot[c + d*Tanh[a + b*x]],x]
```

```
[Out] (x^3*ArcCot[c + d*Tanh[a + b*x]])/3 - (I/6)*x^3*Log[1 + ((I - c - d)*E^(2*a
 + 2*b*x))/(I - c + d)] + (I/6)*x^3*Log[1 + ((I + c + d)*E^(2*a + 2*b*x))/(
I + c - d)] - ((I/4)*x^2*PolyLog[2, -(((I - c - d)*E^(2*a + 2*b*x))/(I - c
+ d))])/b + ((I/4)*x^2*PolyLog[2, -(((I + c + d)*E^(2*a + 2*b*x))/(I + c -
d))])/b + ((I/4)*x*PolyLog[3, -(((I - c - d)*E^(2*a + 2*b*x))/(I - c + d))]
)/b^2 - ((I/4)*x*PolyLog[3, -(((I + c + d)*E^(2*a + 2*b*x))/(I + c - d))])/
b^2 - ((I/8)*PolyLog[4, -(((I - c - d)*E^(2*a + 2*b*x))/(I - c + d))])/b^3
+ ((I/8)*PolyLog[4, -(((I + c + d)*E^(2*a + 2*b*x))/(I + c - d))])/b^3
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 5200

```
Int[ArcCot[(c_.) + (d_.)*Tanh[(a_.) + (b_.)*(x_)]]*((e_.) + (f_.)*(x_))^(m_
.), x_Symbol] :> Simp[((e + f*x)^(m + 1)*ArcCot[c + d*Tanh[a + b*x]])/(f*(m
 + 1)), x] + (-Dist[(I*b*(I - c - d))/(f*(m + 1)), Int[((e + f*x)^(m + 1)*E
^(2*a + 2*b*x))/(I - c + d + (I - c - d)*E^(2*a + 2*b*x)), x], x] + Dist[(I
*b*(I + c + d))/(f*(m + 1)), Int[((e + f*x)^(m + 1)*E^(2*a + 2*b*x))/(I + c
 - d + (I + c + d)*E^(2*a + 2*b*x)), x], x]) /; FreeQ[{a, b, c, d, e, f}, x
] && IGtQ[m, 0] && NeQ[(c - d)^2, -1]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6609

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[((e + f*x)^m*PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p])/(b*c*p*Log[F]), x] - Dist[(f*m)/(b*c*p*Log[F]), Int[(e + f*x)^
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
 d, e, f, n, p}, x] && GtQ[m, 0]
```

Rubi steps

$$\int x^2 \cot^{-1}(c+d\tanh(a+bx))\,dx = \frac{1}{3}x^3\cot^{-1}(c+d\tanh(a+bx)) - \frac{1}{3}(b(1-i(c+d)))\int \frac{e^{2a+2bx}x^3}{i+c-d+(i+c+\ldots}$$

$$= \frac{1}{3}x^3\cot^{-1}(c+d\tanh(a+bx)) - \frac{1}{6}ix^3\log\left(1+\frac{(i-c-d)e^{2a+2bx}}{i-c+d}\right) + \frac{1}{6}ix^3\ldots$$

$$= \frac{1}{3}x^3\cot^{-1}(c+d\tanh(a+bx)) - \frac{1}{6}ix^3\log\left(1+\frac{(i-c-d)e^{2a+2bx}}{i-c+d}\right) + \frac{1}{6}ix^3\ldots$$

$$= \frac{1}{3}x^3\cot^{-1}(c+d\tanh(a+bx)) - \frac{1}{6}ix^3\log\left(1+\frac{(i-c-d)e^{2a+2bx}}{i-c+d}\right) + \frac{1}{6}ix^3\ldots$$

$$= \frac{1}{3}x^3\cot^{-1}(c+d\tanh(a+bx)) - \frac{1}{6}ix^3\log\left(1+\frac{(i-c-d)e^{2a+2bx}}{i-c+d}\right) + \frac{1}{6}ix^3\ldots$$

$$= \frac{1}{3}x^3\cot^{-1}(c+d\tanh(a+bx)) - \frac{1}{6}ix^3\log\left(1+\frac{(i-c-d)e^{2a+2bx}}{i-c+d}\right) + \frac{1}{6}ix^3\ldots$$

Mathematica [A] time = 5.46, size = 305, normalized size = 0.86

$$\frac{1}{3}x^3\cot^{-1}(d\tanh(a+bx)+c) - \frac{i\left(4b^3x^3\log\left(1+\frac{(c+d-i)e^{2(a+bx)}}{c-d-i}\right) - 4b^3x^3\log\left(1+\frac{(c+d+i)e^{2(a+bx)}}{c-d+i}\right) + 6b^2x^2\text{Li}_2\left(-\frac{(c+d-\ldots}{c-\ldots}\right.\ldots}{\ldots}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*ArcCot[c + d*Tanh[a + b*x]],x]
```

```
[Out] (x^3*ArcCot[c + d*Tanh[a + b*x]])/3 - ((I/24)*(4*b^3*x^3*Log[1 + ((-I + c +
 d)*E^(2*(a + b*x)))/(-I + c - d)] - 4*b^3*x^3*Log[1 + ((I + c + d)*E^(2*(a
 + b*x)))/(I + c - d)] + 6*b^2*x^2*PolyLog[2, -(((-I + c + d)*E^(2*(a + b*x
```

```
)))/(-I + c - d))] - 6*b^2*x^2*PolyLog[2, -(((I + c + d)*E^(2*(a + b*x)))/(
I + c - d))] - 6*b*x*PolyLog[3, -(((-I + c + d)*E^(2*(a + b*x)))/(-I + c -
d))] + 6*b*x*PolyLog[3, -(((I + c + d)*E^(2*(a + b*x)))/(I + c - d))] + 3*P
olyLog[4, -(((-I + c + d)*E^(2*(a + b*x)))/(-I + c - d))] - 3*PolyLog[4, -(
((I + c + d)*E^(2*(a + b*x)))/(I + c - d))]))/b^3
```

fricas [C] time = 0.72, size = 1335, normalized size = 3.76

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*arccot(c+d*tanh(b*x+a)),x, algorithm="fricas")
```

```
[Out] 1/6*(2*b^3*x^3*arctan(cosh(b*x + a)/(c*cosh(b*x + a) + d*sinh(b*x + a))) -
3*I*b^2*x^2*dilog(1/2*sqrt(-(4*c^2 - 4*d^2 + 8*I*d + 4)/(c^2 - 2*c*d + d^2
+ 1))*(cosh(b*x + a) + sinh(b*x + a))) - 3*I*b^2*x^2*dilog(-1/2*sqrt(-(4*c^
2 - 4*d^2 + 8*I*d + 4)/(c^2 - 2*c*d + d^2 + 1))*(cosh(b*x + a) + sinh(b*x +
 a))) + 3*I*b^2*x^2*dilog(1/2*sqrt(-(4*c^2 - 4*d^2 - 8*I*d + 4)/(c^2 - 2*c*
d + d^2 + 1))*(cosh(b*x + a) + sinh(b*x + a))) + 3*I*b^2*x^2*dilog(-1/2*sqr
t(-(4*c^2 - 4*d^2 - 8*I*d + 4)/(c^2 - 2*c*d + d^2 + 1))*(cosh(b*x + a) + si
nh(b*x + a))) + I*a^3*log(2*(c^2 + 2*c*d + d^2 + 1)*cosh(b*x + a) + 2*(c^2
+ 2*c*d + d^2 + 1)*sinh(b*x + a) + (c^2 - d^2 - 2*I*d + 1)*sqrt(-(4*c^2 - 4
*d^2 + 8*I*d + 4)/(c^2 - 2*c*d + d^2 + 1))) + I*a^3*log(2*(c^2 + 2*c*d + d^
2 + 1)*cosh(b*x + a) + 2*(c^2 + 2*c*d + d^2 + 1)*sinh(b*x + a) - (c^2 - d^2
 - 2*I*d + 1)*sqrt(-(4*c^2 - 4*d^2 + 8*I*d + 4)/(c^2 - 2*c*d + d^2 + 1))) -
 I*a^3*log(2*(c^2 + 2*c*d + d^2 + 1)*cosh(b*x + a) + 2*(c^2 + 2*c*d + d^2 +
 1)*sinh(b*x + a) + (c^2 - d^2 + 2*I*d + 1)*sqrt(-(4*c^2 - 4*d^2 - 8*I*d +
4)/(c^2 - 2*c*d + d^2 + 1))) - I*a^3*log(2*(c^2 + 2*c*d + d^2 + 1)*cosh(b*x
 + a) + 2*(c^2 + 2*c*d + d^2 + 1)*sinh(b*x + a) - (c^2 - d^2 + 2*I*d + 1)*s
qrt(-(4*c^2 - 4*d^2 - 8*I*d + 4)/(c^2 - 2*c*d + d^2 + 1))) + 6*I*b*x*polylo
g(3, 1/2*sqrt(-(4*c^2 - 4*d^2 + 8*I*d + 4)/(c^2 - 2*c*d + d^2 + 1))*(cosh(b
*x + a) + sinh(b*x + a))) + 6*I*b*x*polylog(3, -1/2*sqrt(-(4*c^2 - 4*d^2 +
8*I*d + 4)/(c^2 - 2*c*d + d^2 + 1))*(cosh(b*x + a) + sinh(b*x + a))) - 6*I*
b*x*polylog(3, 1/2*sqrt(-(4*c^2 - 4*d^2 - 8*I*d + 4)/(c^2 - 2*c*d + d^2 + 1
))*(cosh(b*x + a) + sinh(b*x + a))) - 6*I*b*x*polylog(3, -1/2*sqrt(-(4*c^2
- 4*d^2 - 8*I*d + 4)/(c^2 - 2*c*d + d^2 + 1))*(cosh(b*x + a) + sinh(b*x + a
))) + (-I*b^3*x^3 - I*a^3)*log(1/2*sqrt(-(4*c^2 - 4*d^2 + 8*I*d + 4)/(c^2 -
 2*c*d + d^2 + 1))*(cosh(b*x + a) + sinh(b*x + a)) + 1) + (-I*b^3*x^3 - I*a
^3)*log(-1/2*sqrt(-(4*c^2 - 4*d^2 + 8*I*d + 4)/(c^2 - 2*c*d + d^2 + 1))*(co
sh(b*x + a) + sinh(b*x + a)) + 1) + (I*b^3*x^3 + I*a^3)*log(1/2*sqrt(-(4*c^
2 - 4*d^2 - 8*I*d + 4)/(c^2 - 2*c*d + d^2 + 1))*(cosh(b*x + a) + sinh(b*x +
 a)) + 1) + (I*b^3*x^3 + I*a^3)*log(-1/2*sqrt(-(4*c^2 - 4*d^2 - 8*I*d + 4)/
(c^2 - 2*c*d + d^2 + 1))*(cosh(b*x + a) + sinh(b*x + a)) + 1) - 6*I*polylog
(4, 1/2*sqrt(-(4*c^2 - 4*d^2 + 8*I*d + 4)/(c^2 - 2*c*d + d^2 + 1))*(cosh(b*
x + a) + sinh(b*x + a))) - 6*I*polylog(4, -1/2*sqrt(-(4*c^2 - 4*d^2 + 8*I*d
 + 4)/(c^2 - 2*c*d + d^2 + 1))*(cosh(b*x + a) + sinh(b*x + a))) + 6*I*polyl
og(4, 1/2*sqrt(-(4*c^2 - 4*d^2 - 8*I*d + 4)/(c^2 - 2*c*d + d^2 + 1))*(cosh(
b*x + a) + sinh(b*x + a))) + 6*I*polylog(4, -1/2*sqrt(-(4*c^2 - 4*d^2 - 8*I
*d + 4)/(c^2 - 2*c*d + d^2 + 1))*(cosh(b*x + a) + sinh(b*x + a))))/b^3
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^2 \operatorname{arccot}\left(d \tanh\left(bx + a\right) + c\right) \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*arccot(c+d*tanh(b*x+a)),x, algorithm="giac")
```

```
[Out] integrate(x^2*arccot(d*tanh(b*x + a) + c), x)
```

maple [C] time = 60.45, size = 6930, normalized size = 19.52

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*arccot(c+d*tanh(b*x+a)),x)
```

```
[Out] result too large to display
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{3}\,x^3\arctan\left(e^{(2\,bx+2\,a)}+1,\left(ce^{(2\,a)}+de^{(2\,a)}\right)e^{(2\,bx)}+c-d\right)+4\,bd\int\frac{}{3\left(c^2-2\,cd+d^2+\left(c^2e^{(4\,a)}+2\,cde^{(4\,a)}+d^2e^{(\cdot}\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*arccot(c+d*tanh(b*x+a)),x, algorithm="maxima")
```

```
[Out] 1/3*x^3*arctan2(e^(2*b*x + 2*a) + 1, (c*e^(2*a) + d*e^(2*a))*e^(2*b*x) + c
- d) + 4*b*d*integrate(1/3*x^3*e^(2*b*x + 2*a)/(c^2 - 2*c*d + d^2 + (c^2*e^
(4*a) + 2*c*d*e^(4*a) + d^2*e^(4*a) + e^(4*a))*e^(4*b*x) + 2*(c^2*e^(2*a) -
 d^2*e^(2*a) + e^(2*a))*e^(2*b*x) + 1), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int x^2\,\mathrm{acot}\left(c+d\,\tanh\left(a+b\,x\right)\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*acot(c + d*tanh(a + b*x)),x)
```

```
[Out] int(x^2*acot(c + d*tanh(a + b*x)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*acot(c+d*tanh(b*x+a)),x)
```

```
[Out] Timed out
```

3.189 $\int x \cot^{-1}(c + d \tanh(a + bx))\, dx$

Optimal. Leaf size=267

$$\frac{i\text{Li}_3\left(-\frac{(-c-d+i)e^{2a+2bx}}{-c+d+i}\right)}{8b^2}-\frac{i\text{Li}_3\left(-\frac{(c+d+i)e^{2a+2bx}}{c-d+i}\right)}{8b^2}-\frac{ix\text{Li}_2\left(-\frac{(-c-d+i)e^{2a+2bx}}{-c+d+i}\right)}{4b}+\frac{ix\text{Li}_2\left(-\frac{(c+d+i)e^{2a+2bx}}{c-d+i}\right)}{4b}-\frac{1}{4}ix^2\log\left(1+\frac{(-c-d}{-c}\right.$$

```
[Out] 1/2*x^2*arccot(c+d*tanh(b*x+a))-1/4*I*x^2*ln(1+(I-c-d)*exp(2*b*x+2*a)/(I-c+
d))+1/4*I*x^2*ln(1+(I+c+d)*exp(2*b*x+2*a)/(I+c-d))-1/4*I*x*polylog(2,-(I-c-
d)*exp(2*b*x+2*a)/(I-c+d))/b+1/4*I*x*polylog(2,-(I+c+d)*exp(2*b*x+2*a)/(I+c
-d))/b+1/8*I*polylog(3,-(I-c-d)*exp(2*b*x+2*a)/(I-c+d))/b^2-1/8*I*polylog(3
,-(I+c+d)*exp(2*b*x+2*a)/(I+c-d))/b^2
```

Rubi [A] time = 0.38, antiderivative size = 267, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 5, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}} = 0.385$, Rules used = {5200, 2190, 2531, 2282, 6589}

$$\frac{i\text{PolyLog}\left(3,-\frac{(-c-d+i)e^{2a+2bx}}{-c+d+i}\right)}{8b^2}-\frac{i\text{PolyLog}\left(3,-\frac{(c+d+i)e^{2a+2bx}}{c-d+i}\right)}{8b^2}-\frac{ix\text{PolyLog}\left(2,-\frac{(-c-d+i)e^{2a+2bx}}{-c+d+i}\right)}{4b}+\frac{ix\text{PolyLog}\left(2,-\frac{(c+a}{}\right.}{4b}$$

Antiderivative was successfully verified.

```
[In] Int[x*ArcCot[c + d*Tanh[a + b*x]],x]
```

```
[Out] (x^2*ArcCot[c + d*Tanh[a + b*x]])/2 - (I/4)*x^2*Log[1 + ((I - c - d)*E^(2*a
 + 2*b*x))/(I - c + d)] + (I/4)*x^2*Log[1 + ((I + c + d)*E^(2*a + 2*b*x))/(
I + c - d)] - ((I/4)*x*PolyLog[2, -(((I - c - d)*E^(2*a + 2*b*x))/(I - c +
d))])/b + ((I/4)*x*PolyLog[2, -(((I + c + d)*E^(2*a + 2*b*x))/(I + c - d))]
)/b + ((I/8)*PolyLog[3, -(((I - c - d)*E^(2*a + 2*b*x))/(I - c + d))])/b^2
- ((I/8)*PolyLog[3, -(((I + c + d)*E^(2*a + 2*b*x))/(I + c - d))])/b^2
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 5200

```
Int[ArcCot[(c_.) + (d_.)*Tanh[(a_.) + (b_.)*(x_)]]*((e_.) + (f_.)*(x_))^(m_
.), x_Symbol] :> Simp[((e + f*x)^(m + 1)*ArcCot[c + d*Tanh[a + b*x]])/(f*(m
```

```
 + 1)), x] + (-Dist[(I*b*(I - c - d))/(f*(m + 1)), Int[((e + f*x)^(m + 1)*E
^(2*a + 2*b*x))/(I - c + d + (I - c - d)*E^(2*a + 2*b*x)), x], x] + Dist[(I
*b*(I + c + d))/(f*(m + 1)), Int[((e + f*x)^(m + 1)*E^(2*a + 2*b*x))/(I + c
 - d + (I + c + d)*E^(2*a + 2*b*x)), x], x]) /; FreeQ[{a, b, c, d, e, f}, x
] && IGtQ[m, 0] && NeQ[(c - d)^2, -1]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int x\cot^{-1}(c+d\tanh(a+bx))\,dx = \frac{1}{2}x^2\cot^{-1}(c+d\tanh(a+bx)) - \frac{1}{2}(b(1-i(c+d)))\int \frac{e^{2a+2bx}x^2}{i+c-d+(i+c+d}$$

$$= \frac{1}{2}x^2\cot^{-1}(c+d\tanh(a+bx)) - \frac{1}{4}ix^2\log\left(1+\frac{(i-c-d)e^{2a+2bx}}{i-c+d}\right) + \frac{1}{4}ix^2\text{lo}$$

$$= \frac{1}{2}x^2\cot^{-1}(c+d\tanh(a+bx)) - \frac{1}{4}ix^2\log\left(1+\frac{(i-c-d)e^{2a+2bx}}{i-c+d}\right) + \frac{1}{4}ix^2\text{lo}$$

$$= \frac{1}{2}x^2\cot^{-1}(c+d\tanh(a+bx)) - \frac{1}{4}ix^2\log\left(1+\frac{(i-c-d)e^{2a+2bx}}{i-c+d}\right) + \frac{1}{4}ix^2\text{lo}$$

$$= \frac{1}{2}x^2\cot^{-1}(c+d\tanh(a+bx)) - \frac{1}{4}ix^2\log\left(1+\frac{(i-c-d)e^{2a+2bx}}{i-c+d}\right) + \frac{1}{4}ix^2\text{lo}$$

Mathematica [A] time = 4.20, size = 229, normalized size = 0.86

$$\frac{1}{2}x^2\cot^{-1}(d\tanh(a+bx)+c) - \frac{i\left(2b^2x^2\log\left(1+\frac{(c+d-i)e^{2(a+bx)}}{c-d-i}\right) - 2b^2x^2\log\left(1+\frac{(c+d+i)e^{2(a+bx)}}{c-d+i}\right) + 2bx\text{Li}_2\left(-\frac{(c+d-i)e^{2}}{c-d-}\right.}{8b^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[x*ArcCot[c + d*Tanh[a + b*x]],x]
```

```
[Out] (x^2*ArcCot[c + d*Tanh[a + b*x]])/2 - ((I/8)*(2*b^2*x^2*Log[1 + ((-I + c +
d)*E^(2*(a + b*x)))/(-I + c - d)] - 2*b^2*x^2*Log[1 + ((I + c + d)*E^(2*(a
+ b*x)))/(I + c - d)] + 2*b*x*PolyLog[2, -(((-I + c + d)*E^(2*(a + b*x)))/(
-I + c - d))] - 2*b*x*PolyLog[2, -(((I + c + d)*E^(2*(a + b*x)))/(I + c - d
))] - PolyLog[3, -(((-I + c + d)*E^(2*(a + b*x)))/(-I + c - d))] + PolyLog[
3, -(((I + c + d)*E^(2*(a + b*x)))/(I + c - d))]))/b^2
```

fricas [C] time = 0.71, size = 1103, normalized size = 4.13

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*arccot(c+d*tanh(b*x+a)),x, algorithm="fricas")
```

```
[Out] 1/4*(2*b^2*x^2*arctan(cosh(b*x + a)/(c*cosh(b*x + a) + d*sinh(b*x + a))) -
2*I*b*x*dilog(1/2*sqrt(-(4*c^2 - 4*d^2 + 8*I*d + 4)/(c^2 - 2*c*d + d^2 + 1)
)*(cosh(b*x + a) + sinh(b*x + a))) - 2*I*b*x*dilog(-1/2*sqrt(-(4*c^2 - 4*d^
```

```
2 + 8*I*d + 4)/(c^2 - 2*c*d + d^2 + 1))*(cosh(b*x + a) + sinh(b*x + a))) +
2*I*b*x*dilog(1/2*sqrt(-(4*c^2 - 4*d^2 - 8*I*d + 4)/(c^2 - 2*c*d + d^2 + 1)
)*(cosh(b*x + a) + sinh(b*x + a))) + 2*I*b*x*dilog(-1/2*sqrt(-(4*c^2 - 4*d^
2 - 8*I*d + 4)/(c^2 - 2*c*d + d^2 + 1))*(cosh(b*x + a) + sinh(b*x + a))) -
I*a^2*log(2*(c^2 + 2*c*d + d^2 + 1)*cosh(b*x + a) + 2*(c^2 + 2*c*d + d^2 +
1)*sinh(b*x + a) + (c^2 - d^2 - 2*I*d + 1)*sqrt(-(4*c^2 - 4*d^2 + 8*I*d + 4
)/(c^2 - 2*c*d + d^2 + 1))) - I*a^2*log(2*(c^2 + 2*c*d + d^2 + 1)*cosh(b*x
+ a) + 2*(c^2 + 2*c*d + d^2 + 1)*sinh(b*x + a) - (c^2 - d^2 - 2*I*d + 1)*sq
rt(-(4*c^2 - 4*d^2 + 8*I*d + 4)/(c^2 - 2*c*d + d^2 + 1))) + I*a^2*log(2*(c^
2 + 2*c*d + d^2 + 1)*cosh(b*x + a) + 2*(c^2 + 2*c*d + d^2 + 1)*sinh(b*x + a
) + (c^2 - d^2 + 2*I*d + 1)*sqrt(-(4*c^2 - 4*d^2 - 8*I*d + 4)/(c^2 - 2*c*d
+ d^2 + 1))) + I*a^2*log(2*(c^2 + 2*c*d + d^2 + 1)*cosh(b*x + a) + 2*(c^2 +
 2*c*d + d^2 + 1)*sinh(b*x + a) - (c^2 - d^2 + 2*I*d + 1)*sqrt(-(4*c^2 - 4*
d^2 - 8*I*d + 4)/(c^2 - 2*c*d + d^2 + 1))) + (-I*b^2*x^2 + I*a^2)*log(1/2*s
qrt(-(4*c^2 - 4*d^2 + 8*I*d + 4)/(c^2 - 2*c*d + d^2 + 1))*(cosh(b*x + a) +
sinh(b*x + a)) + 1) + (-I*b^2*x^2 + I*a^2)*log(-1/2*sqrt(-(4*c^2 - 4*d^2 +
8*I*d + 4)/(c^2 - 2*c*d + d^2 + 1))*(cosh(b*x + a) + sinh(b*x + a)) + 1) +
(I*b^2*x^2 - I*a^2)*log(1/2*sqrt(-(4*c^2 - 4*d^2 - 8*I*d + 4)/(c^2 - 2*c*d
+ d^2 + 1))*(cosh(b*x + a) + sinh(b*x + a)) + 1) + (I*b^2*x^2 - I*a^2)*log(
-1/2*sqrt(-(4*c^2 - 4*d^2 - 8*I*d + 4)/(c^2 - 2*c*d + d^2 + 1))*(cosh(b*x +
 a) + sinh(b*x + a)) + 1) + 2*I*polylog(3, 1/2*sqrt(-(4*c^2 - 4*d^2 + 8*I*d
 + 4)/(c^2 - 2*c*d + d^2 + 1))*(cosh(b*x + a) + sinh(b*x + a))) + 2*I*polyl
og(3, -1/2*sqrt(-(4*c^2 - 4*d^2 + 8*I*d + 4)/(c^2 - 2*c*d + d^2 + 1))*(cosh
(b*x + a) + sinh(b*x + a))) - 2*I*polylog(3, 1/2*sqrt(-(4*c^2 - 4*d^2 - 8*I
*d + 4)/(c^2 - 2*c*d + d^2 + 1))*(cosh(b*x + a) + sinh(b*x + a))) - 2*I*pol
ylog(3, -1/2*sqrt(-(4*c^2 - 4*d^2 - 8*I*d + 4)/(c^2 - 2*c*d + d^2 + 1))*(co
sh(b*x + a) + sinh(b*x + a))))/b^2
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x \operatorname{arccot}\left(d \tanh\left(bx + a\right) + c\right) \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*arccot(c+d*tanh(b*x+a)),x, algorithm="giac")
```

```
[Out] integrate(x*arccot(d*tanh(b*x + a) + c), x)
```

maple [C] time = 6.45, size = 6580, normalized size = 24.64

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*arccot(c+d*tanh(b*x+a)),x)
```

```
[Out] result too large to display
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{2}\,x^2 \arctan\left(e^{(2\,bx+2\,a)}+1, \left(ce^{(2\,a)}+de^{(2\,a)}\right)e^{(2\,bx)}+c-d\right)+2\,bd\int \frac{x^2e^{(2}}{c^2-2\,cd+d^2+\left(c^2e^{(4\,a)}+2\,cde^{(4\,a)}+d^2e^{(4\,a)}+\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*arccot(c+d*tanh(b*x+a)),x, algorithm="maxima")
```

```
[Out] 1/2*x^2*arctan2(e^(2*b*x + 2*a) + 1, (c*e^(2*a) + d*e^(2*a))*e^(2*b*x) + c
- d) + 2*b*d*integrate(x^2*e^(2*b*x + 2*a)/(c^2 - 2*c*d + d^2 + (c^2*e^(4*a
) + 2*c*d*e^(4*a) + d^2*e^(4*a) + e^(4*a))*e^(4*b*x) + 2*(c^2*e^(2*a) - d^2
*e^(2*a) + e^(2*a))*e^(2*b*x) + 1), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int x \operatorname{acot}(c + d \tanh(a + b x)) \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*acot(c + d*tanh(a + b*x)),x)
[Out] int(x*acot(c + d*tanh(a + b*x)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*acot(c+d*tanh(b*x+a)),x)
[Out] Timed out
```

3.190 $\int \cot^{-1}(c + d\tanh(a + bx))\,dx$

Optimal. Leaf size=174

$$-\frac{i\text{Li}_2\left(-\frac{(-c-d+i)e^{2a+2bx}}{-c+d+i}\right)}{4b}+\frac{i\text{Li}_2\left(-\frac{(c+d+i)e^{2a+2bx}}{c-d+i}\right)}{4b}-\frac{1}{2}ix\log\left(1+\frac{(-c-d+i)e^{2a+2bx}}{-c+d+i}\right)+\frac{1}{2}ix\log\left(1+\frac{(c+d+i)e^{2a+2bx}}{c-d+i}\right)$$

```
[Out] x*arccot(c+d*tanh(b*x+a))-1/2*I*x*ln(1+(I-c-d)*exp(2*b*x+2*a)/(I-c+d))+1/2*
I*x*ln(1+(I+c+d)*exp(2*b*x+2*a)/(I+c-d))-1/4*I*polylog(2,-(I-c-d)*exp(2*b*x
+2*a)/(I-c+d))/b+1/4*I*polylog(2,-(I+c+d)*exp(2*b*x+2*a)/(I+c-d))/b
```

Rubi [A] time = 0.22, antiderivative size = 174, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 4, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}} = 0.364$, Rules used = {5192, 2190, 2279, 2391}

$$-\frac{i\text{PolyLog}\left(2,-\frac{(-c-d+i)e^{2a+2bx}}{-c+d+i}\right)}{4b}+\frac{i\text{PolyLog}\left(2,-\frac{(c+d+i)e^{2a+2bx}}{c-d+i}\right)}{4b}-\frac{1}{2}ix\log\left(1+\frac{(-c-d+i)e^{2a+2bx}}{-c+d+i}\right)+\frac{1}{2}ix\log\left(1+\frac{(c\cdots}{}\right.$$

Antiderivative was successfully verified.

```
[In] Int[ArcCot[c + d*Tanh[a + b*x]],x]
```

```
[Out] x*ArcCot[c + d*Tanh[a + b*x]] - (I/2)*x*Log[1 + ((I - c - d)*E^(2*a + 2*b*x
))/(I - c + d)] + (I/2)*x*Log[1 + ((I + c + d)*E^(2*a + 2*b*x))/(I + c - d)
] - ((I/4)*PolyLog[2, -(((I - c - d)*E^(2*a + 2*b*x))/(I - c + d))])/b + ((
I/4)*PolyLog[2, -(((I + c + d)*E^(2*a + 2*b*x))/(I + c - d))])/b
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 5192

```
Int[ArcCot[(c_.) + (d_.)*Tanh[(a_.) + (b_.)*(x_)]], x_Symbol] :> Simp[x*Arc
Cot[c + d*Tanh[a + b*x]], x] + (-Dist[I*b*(I - c - d), Int[(x*E^(2*a + 2*b*
x))/(I - c + d + (I - c - d)*E^(2*a + 2*b*x)), x], x] + Dist[I*b*(I + c + d
), Int[(x*E^(2*a + 2*b*x))/(I + c - d + (I + c + d)*E^(2*a + 2*b*x)), x], x
]) /; FreeQ[{a, b, c, d}, x] && NeQ[(c - d)^2, -1]
```

Rubi steps

$$\int \cot^{-1}(c + d\tanh(a + bx))\,dx = x\cot^{-1}(c + d\tanh(a + bx)) - (b(1 - i(c + d)))\int \frac{e^{2a+2bx}x}{i + c - d + (i + c + d)e^{2a+2b}}$$

$$= x\cot^{-1}(c + d\tanh(a + bx)) - \frac{1}{2}ix\log\left(1 + \frac{(i - c - d)e^{2a+2bx}}{i - c + d}\right) + \frac{1}{2}ix\log\left(1 +\right.$$

$$= x\cot^{-1}(c + d\tanh(a + bx)) - \frac{1}{2}ix\log\left(1 + \frac{(i - c - d)e^{2a+2bx}}{i - c + d}\right) + \frac{1}{2}ix\log\left(1 +\right.$$

$$= x\cot^{-1}(c + d\tanh(a + bx)) - \frac{1}{2}ix\log\left(1 + \frac{(i - c - d)e^{2a+2bx}}{i - c + d}\right) + \frac{1}{2}ix\log\left(1 +\right.$$

Mathematica [A] time = 1.51, size = 288, normalized size = 1.66

$$x\cot^{-1}(d\tanh(a+bx)+c) - \frac{d\text{Li}_2\left(-\frac{(c^2+2dc+d^2+1)e^{2(a+bx)}}{c^2-d^2+2\sqrt{-d^2}+1}\right) - d\text{Li}_2\left(\frac{(c^2+2dc+d^2+1)e^{2(a+bx)}}{-c^2+d^2+2\sqrt{-d^2}-1}\right) - 2d(a+bx)\log\left(\frac{2((c+d)^2+1)e}{2c^2-2d^2-4\sqrt{}}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcCot[c + d*Tanh[a + b*x]],x]
```

```
[Out] x*ArcCot[c + d*Tanh[a + b*x]] - (4*a*Sqrt[-d^2]*ArcTan[(1 + c^2 - d^2 + (1
+ c^2 + 2*c*d + d^2)*E^(2*(a + b*x)))/(2*d)] - 2*d*(a + b*x)*Log[1 + (2*(1
+ (c + d)^2)*E^(2*(a + b*x)))/(2 + 2*c^2 - 2*d^2 - 4*Sqrt[-d^2])] + 2*d*(a
+ b*x)*Log[1 + ((1 + (c + d)^2)*E^(2*(a + b*x)))/(1 + c^2 - d^2 + 2*Sqrt[-d
^2])] + d*PolyLog[2, -(((1 + c^2 + 2*c*d + d^2)*E^(2*(a + b*x)))/(1 + c^2 -
 d^2 + 2*Sqrt[-d^2]))] - d*PolyLog[2, ((1 + c^2 + 2*c*d + d^2)*E^(2*(a + b*
x)))/(-1 - c^2 + d^2 + 2*Sqrt[-d^2])])/(4*b*Sqrt[-d^2])
```

fricas [B] time = 1.65, size = 851, normalized size = 4.89

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(c+d*tanh(b*x+a)),x, algorithm="fricas")
```

```
[Out] 1/2*(2*b*x*arctan(cosh(b*x + a)/(c*cosh(b*x + a) + d*sinh(b*x + a))) + I*a*
log(2*(c^2 + 2*c*d + d^2 + 1)*cosh(b*x + a) + 2*(c^2 + 2*c*d + d^2 + 1)*sin
h(b*x + a) + (c^2 - d^2 - 2*I*d + 1)*sqrt(-(4*c^2 - 4*d^2 + 8*I*d + 4)/(c^2
 - 2*c*d + d^2 + 1))) + I*a*log(2*(c^2 + 2*c*d + d^2 + 1)*cosh(b*x + a) + 2
*(c^2 + 2*c*d + d^2 + 1)*sinh(b*x + a) - (c^2 - d^2 - 2*I*d + 1)*sqrt(-(4*c
^2 - 4*d^2 + 8*I*d + 4)/(c^2 - 2*c*d + d^2 + 1))) - I*a*log(2*(c^2 + 2*c*d
+ d^2 + 1)*cosh(b*x + a) + 2*(c^2 + 2*c*d + d^2 + 1)*sinh(b*x + a) + (c^2 -
 d^2 + 2*I*d + 1)*sqrt(-(4*c^2 - 4*d^2 - 8*I*d + 4)/(c^2 - 2*c*d + d^2 + 1)
)) - I*a*log(2*(c^2 + 2*c*d + d^2 + 1)*cosh(b*x + a) + 2*(c^2 + 2*c*d + d^2
 + 1)*sinh(b*x + a) - (c^2 - d^2 + 2*I*d + 1)*sqrt(-(4*c^2 - 4*d^2 - 8*I*d
+ 4)/(c^2 - 2*c*d + d^2 + 1))) + (-I*b*x - I*a)*log(1/2*sqrt(-(4*c^2 - 4*d^
2 + 8*I*d + 4)/(c^2 - 2*c*d + d^2 + 1))*(cosh(b*x + a) + sinh(b*x + a)) + 1
) + (-I*b*x - I*a)*log(-1/2*sqrt(-(4*c^2 - 4*d^2 + 8*I*d + 4)/(c^2 - 2*c*d
+ d^2 + 1))*(cosh(b*x + a) + sinh(b*x + a)) + 1) + (I*b*x + I*a)*log(1/2*sq
rt(-(4*c^2 - 4*d^2 - 8*I*d + 4)/(c^2 - 2*c*d + d^2 + 1))*(cosh(b*x + a) + s
inh(b*x + a)) + 1) + (I*b*x + I*a)*log(-1/2*sqrt(-(4*c^2 - 4*d^2 - 8*I*d +
4)/(c^2 - 2*c*d + d^2 + 1))*(cosh(b*x + a) + sinh(b*x + a)) + 1) - I*dilog(
1/2*sqrt(-(4*c^2 - 4*d^2 + 8*I*d + 4)/(c^2 - 2*c*d + d^2 + 1))*(cosh(b*x +
a) + sinh(b*x + a))) - I*dilog(-1/2*sqrt(-(4*c^2 - 4*d^2 + 8*I*d + 4)/(c^2
```

```
- 2*c*d + d^2 + 1))*(cosh(b*x + a) + sinh(b*x + a))) + I*dilog(1/2*sqrt(-(4
*c^2 - 4*d^2 - 8*I*d + 4)/(c^2 - 2*c*d + d^2 + 1))*(cosh(b*x + a) + sinh(b*
x + a))) + I*dilog(-1/2*sqrt(-(4*c^2 - 4*d^2 - 8*I*d + 4)/(c^2 - 2*c*d + d^
2 + 1))*(cosh(b*x + a) + sinh(b*x + a))))/b
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \operatorname{arccot}\left(d \tanh\left(bx+a\right)+c\right)\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(c+d*tanh(b*x+a)),x, algorithm="giac")
```

```
[Out] integrate(arccot(d*tanh(b*x + a) + c), x)
```

maple [B] time = 0.38, size = 350, normalized size = 2.01

$$\frac{\operatorname{arccot}\left(c+d\tanh\left(bx+a\right)\right)\ln\left(d\tanh\left(bx+a\right)+d\right)}{2b}-\frac{\operatorname{arccot}\left(c+d\tanh\left(bx+a\right)\right)\ln\left(d\tanh\left(bx+a\right)-d\right)}{2b}+\frac{i\ln(d}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arccot(c+d*tanh(b*x+a)),x)
```

```
[Out] 1/2/b*arccot(c+d*tanh(b*x+a))*ln(d*tanh(b*x+a)+d)-1/2/b*arccot(c+d*tanh(b*x
+a))*ln(d*tanh(b*x+a)-d)+1/4*I/b*ln(d*tanh(b*x+a)-d)*ln((-d*tanh(b*x+a)+I-c
)/(I-c-d))-1/4*I/b*ln(d*tanh(b*x+a)-d)*ln((I+d*tanh(b*x+a)+c)/(I+c+d))+1/4*
I/b*dilog((-d*tanh(b*x+a)+I-c)/(I-c-d))-1/4*I/b*dilog((I+d*tanh(b*x+a)+c)/(
I+c+d))-1/4*I/b*ln(d*tanh(b*x+a)+d)*ln((-d*tanh(b*x+a)+I-c)/(I-c+d))+1/4*I/
b*ln(d*tanh(b*x+a)+d)*ln((I+d*tanh(b*x+a)+c)/(I+c-d))-1/4*I/b*dilog((-d*tan
h(b*x+a)+I-c)/(I-c+d))+1/4*I/b*dilog((I+d*tanh(b*x+a)+c)/(I+c-d))
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$4\,bd\int \frac{xe^{(2\,bx+2\,a)}}{c^2-2\,cd+d^2+\left(c^2e^{(4\,a)}+2\,cde^{(4\,a)}+d^2e^{(4\,a)}+e^{(4\,a)}\right)e^{(4\,bx)}+2\left(c^2e^{(2\,a)}-d^2e^{(2\,a)}+e^{(2\,a)}\right)e^{(2\,bx)}+1}\,dx+x\,\mathrm{arc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(c+d*tanh(b*x+a)),x, algorithm="maxima")
```

```
[Out] 4*b*d*integrate(x*e^(2*b*x + 2*a)/(c^2 - 2*c*d + d^2 + (c^2*e^(4*a) + 2*c*d
*e^(4*a) + d^2*e^(4*a) + e^(4*a))*e^(4*b*x) + 2*(c^2*e^(2*a) - d^2*e^(2*a)
+ e^(2*a))*e^(2*b*x) + 1), x) + x*arctan2(e^(2*b*x + 2*a) + 1, (c*e^(2*a) +
 d*e^(2*a))*e^(2*b*x) + c - d)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \mathrm{acot}\left(c+d\tanh\left(a+b\,x\right)\right)\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(acot(c + d*tanh(a + b*x)),x)
```

```
[Out] int(acot(c + d*tanh(a + b*x)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \operatorname{acot}\left(c+d\tanh\left(a+bx\right)\right) dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(acot(c+d*tanh(b*x+a)),x)
```

```
[Out] Integral(acot(c + d*tanh(a + b*x)), x)
```

3.191 $\int \frac{\cot^{-1}(c+d\tanh(a+bx))}{x} dx$

Optimal. Leaf size=18

$$\text{Int}\left(\frac{\cot^{-1}(d\tanh(a+bx)+c)}{x},x\right)$$

```
[Out] CannotIntegrate(arccot(c+d*tanh(b*x+a))/x,x)
```

Rubi [A] time = 0.08, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\cot^{-1}(c+d\tanh(a+bx))}{x} dx$$

Verification is Not applicable to the result.

```
[In] Int[ArcCot[c + d*Tanh[a + b*x]]/x,x]
[Out] Defer[Int][ArcCot[c + d*Tanh[a + b*x]]/x, x]
```

Rubi steps

$$\int \frac{\cot^{-1}(c+d\tanh(a+bx))}{x} dx = \int \frac{\cot^{-1}(c+d\tanh(a+bx))}{x} dx$$

Mathematica [A] time = 9.51, size = 0, normalized size = 0.00

$$\int \frac{\cot^{-1}(c+d\tanh(a+bx))}{x} dx$$

Verification is Not applicable to the result.

```
[In] Integrate[ArcCot[c + d*Tanh[a + b*x]]/x,x]
[Out] Integrate[ArcCot[c + d*Tanh[a + b*x]]/x, x]
```

fricas [A] time = 0.58, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\text{arccot}\left(d\tanh\left(bx+a\right)+c\right)}{x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(c+d*tanh(b*x+a))/x,x, algorithm="fricas")
[Out] integral(arccot(d*tanh(b*x + a) + c)/x, x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\text{arccot}\left(d\tanh\left(bx+a\right)+c\right)}{x} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(c+d*tanh(b*x+a))/x,x, algorithm="giac")
[Out] integrate(arccot(d*tanh(b*x + a) + c)/x, x)
```

maple [A] time = 1.37, size = 0, normalized size = 0.00

$$\int \frac{\text{arccot}\left(c+d\tanh\left(bx+a\right)\right)}{x} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arccot(c+d*tanh(b*x+a))/x,x)
```

```
[Out] int(arccot(c+d*tanh(b*x+a))/x,x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{arccot}(d\tanh(bx+a)+c)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(c+d*tanh(b*x+a))/x,x, algorithm="maxima")
```

```
[Out] integrate(arccot(d*tanh(b*x + a) + c)/x, x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.06

$$\int \frac{\operatorname{acot}(c+d\tanh(a+b\,x))}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(acot(c + d*tanh(a + b*x))/x,x)
```

```
[Out] int(acot(c + d*tanh(a + b*x))/x, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(acot(c+d*tanh(b*x+a))/x,x)
```

```
[Out] Timed out
```

3.192 $\int x^2 \cot^{-1}(c+(i+c)\tanh(a+bx))\,dx$

Optimal. Leaf size=142

$$-\frac{i\text{Li}_4\left(-ice^{2a+2bx}\right)}{8b^3}+\frac{ix\text{Li}_3\left(-ice^{2a+2bx}\right)}{4b^2}-\frac{ix^2\text{Li}_2\left(-ice^{2a+2bx}\right)}{4b}-\frac{1}{6}ix^3\log\left(1+ice^{2a+2bx}\right)+\frac{1}{3}x^3\cot^{-1}(c+(c+i)\tanh($$

```
[Out] 1/12*I*b*x^4+1/3*x^3*arccot(c+(I+c)*tanh(b*x+a))-1/6*I*x^3*ln(1+I*c*exp(2*b
*x+2*a))-1/4*I*x^2*polylog(2,-I*c*exp(2*b*x+2*a))/b+1/4*I*x*polylog(3,-I*c*
exp(2*b*x+2*a))/b^2-1/8*I*polylog(4,-I*c*exp(2*b*x+2*a))/b^3
```

Rubi [A] time = 0.23, antiderivative size = 142, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 7, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.368, Rules used = {5196, 2184, 2190, 2531, 6609, 2282, 6589}

$$\frac{ix\text{PolyLog}\left(3,-ice^{2a+2bx}\right)}{4b^2}-\frac{i\text{PolyLog}\left(4,-ice^{2a+2bx}\right)}{8b^3}-\frac{ix^2\text{PolyLog}\left(2,-ice^{2a+2bx}\right)}{4b}-\frac{1}{6}ix^3\log\left(1+ice^{2a+2bx}\right)+\frac{1}{3}$$

Antiderivative was successfully verified.

```
[In] Int[x^2*ArcCot[c + (I + c)*Tanh[a + b*x]],x]
```

```
[Out] (I/12)*b*x^4 + (x^3*ArcCot[c + (I + c)*Tanh[a + b*x]])/3 - (I/6)*x^3*Log[1
+ I*c*E^(2*a + 2*b*x)] - ((I/4)*x^2*PolyLog[2, (-I)*c*E^(2*a + 2*b*x)])/b +
 ((I/4)*x*PolyLog[3, (-I)*c*E^(2*a + 2*b*x)])/b^2 - ((I/8)*PolyLog[4, (-I)*
c*E^(2*a + 2*b*x)])/b^3
```

Rule 2184

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x
_))))^(n_.)), x_Symbol] :> Simp[(c + d*x)^(m + 1)/(a*d*(m + 1)), x] - Dist[
b/a, Int[((c + d*x)^m*(F^(g*(e + f*x)))^n)/(a + b*(F^(g*(e + f*x)))^n), x],
 x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 5196

```
Int[ArcCot[(c_.) + (d_.)*Tanh[(a_.) + (b_.)*(x_)]]*((e_.) + (f_.)*(x_))^(m_
.), x_Symbol] :> Simp[((e + f*x)^(m + 1)*ArcCot[c + d*Tanh[a + b*x]])/(f*(m
 + 1)), x] + Dist[b/(f*(m + 1)), Int[(e + f*x)^(m + 1)/(c - d + c*E^(2*a +
2*b*x)), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && EqQ[(c - d
)^2, -1]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6609

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[((e + f*x)^m*PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p])/(b*c*p*Log[F]), x] - Dist[(f*m)/(b*c*p*Log[F]), Int[(e + f*x)^
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
 d, e, f, n, p}, x] && GtQ[m, 0]
```

Rubi steps

$$\int x^2 \cot^{-1}(c+(i+c)\tanh(a+bx))\,dx = \frac{1}{3}x^3\cot^{-1}(c+(i+c)\tanh(a+bx)) + \frac{1}{3}b\int \frac{x^3}{-i+ce^{2a+2bx}}\,dx$$

$$= \frac{1}{12}ibx^4 + \frac{1}{3}x^3\cot^{-1}(c+(i+c)\tanh(a+bx)) - \frac{1}{3}(ibc)\int \frac{e^{2a+2bx}x^3}{-i+ce^{2a+2bx}}$$

$$= \frac{1}{12}ibx^4 + \frac{1}{3}x^3\cot^{-1}(c+(i+c)\tanh(a+bx)) - \frac{1}{6}ix^3\log\left(1+ice^{2a+2bx}\right)$$

$$= \frac{1}{12}ibx^4 + \frac{1}{3}x^3\cot^{-1}(c+(i+c)\tanh(a+bx)) - \frac{1}{6}ix^3\log\left(1+ice^{2a+2bx}\right)$$

$$= \frac{1}{12}ibx^4 + \frac{1}{3}x^3\cot^{-1}(c+(i+c)\tanh(a+bx)) - \frac{1}{6}ix^3\log\left(1+ice^{2a+2bx}\right)$$

$$= \frac{1}{12}ibx^4 + \frac{1}{3}x^3\cot^{-1}(c+(i+c)\tanh(a+bx)) - \frac{1}{6}ix^3\log\left(1+ice^{2a+2bx}\right)$$

$$= \frac{1}{12}ibx^4 + \frac{1}{3}x^3\cot^{-1}(c+(i+c)\tanh(a+bx)) - \frac{1}{6}ix^3\log\left(1+ice^{2a+2bx}\right)$$

Mathematica [A] time = 0.22, size = 128, normalized size = 0.90

$$\frac{1}{3}x^3\cot^{-1}(c+(c+i)\tanh(a+bx)) - \frac{i\left(4b^3x^3\log\left(1-\frac{ie^{-2(a+bx)}}{c}\right) - 6b^2x^2\text{Li}_2\left(\frac{ie^{-2(a+bx)}}{c}\right) - 6bx\text{Li}_3\left(\frac{ie^{-2(a+bx)}}{c}\right) - 3\text{Li}_4\left(\frac{ie^{-2(a+bx)}}{c}\right.\right.}{24b^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*ArcCot[c + (I + c)*Tanh[a + b*x]],x]
```

```
[Out] (x^3*ArcCot[c + (I + c)*Tanh[a + b*x]])/3 - ((I/24)*(4*b^3*x^3*Log[1 - I/(c
*E^(2*(a + b*x)))] - 6*b^2*x^2*PolyLog[2, I/(c*E^(2*(a + b*x)))] - 6*b*x*Po
lyLog[3, I/(c*E^(2*(a + b*x)))] - 3*PolyLog[4, I/(c*E^(2*(a + b*x)))]))/b^3
```

fricas [C] time = 0.84, size = 290, normalized size = 2.04

$$i\,b^4x^4 + 2i\,b^3x^3\log\left(\frac{\left(ce^{(2\,bx+2\,a)}-i\right)e^{(-2\,bx-2\,a)}}{c+i}\right) - 6i\,b^2x^2\text{Li}_2\left(\frac{1}{2}\sqrt{-4i\,c}\,e^{(bx+a)}\right) - 6i\,b^2x^2\text{Li}_2\left(-\frac{1}{2}\sqrt{-4i\,c}\,e^{(bx+a)}\right) - i\,a^4 + 2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*arccot(c+(I+c)*tanh(b*x+a)),x, algorithm="fricas")
```

```
[Out] 1/12*(I*b^4*x^4 + 2*I*b^3*x^3*log((c*e^(2*b*x + 2*a) - I)*e^(-2*b*x - 2*a)/
(c + I)) - 6*I*b^2*x^2*dilog(1/2*sqrt(-4*I*c)*e^(b*x + a)) - 6*I*b^2*x^2*di
log(-1/2*sqrt(-4*I*c)*e^(b*x + a)) - I*a^4 + 2*I*a^3*log(1/2*(2*c*e^(b*x +
a) + I*sqrt(-4*I*c))/c) + 2*I*a^3*log(1/2*(2*c*e^(b*x + a) - I*sqrt(-4*I*c)
)/c) + 12*I*b*x*polylog(3, 1/2*sqrt(-4*I*c)*e^(b*x + a)) + 12*I*b*x*polylog
(3, -1/2*sqrt(-4*I*c)*e^(b*x + a)) + (-2*I*b^3*x^3 - 2*I*a^3)*log(1/2*sqrt(
-4*I*c)*e^(b*x + a) + 1) + (-2*I*b^3*x^3 - 2*I*a^3)*log(-1/2*sqrt(-4*I*c)*e
^(b*x + a) + 1) - 12*I*polylog(4, 1/2*sqrt(-4*I*c)*e^(b*x + a)) - 12*I*poly
log(4, -1/2*sqrt(-4*I*c)*e^(b*x + a)))/b^3
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^2 \operatorname{arccot}\left((c+i)\tanh\left(bx+a\right)+c\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*arccot(c+(I+c)*tanh(b*x+a)),x, algorithm="giac")
```

```
[Out] integrate(x^2*arccot((c + I)*tanh(b*x + a) + c), x)
```

maple [C] time = 6.27, size = 1549, normalized size = 10.91

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*arccot(c+(I+c)*tanh(b*x+a)),x)
```

```
[Out] 1/4*I*x*polylog(3,-I*c*exp(2*b*x+2*a))/b^2-1/6*I*x^3*ln(1+I*c*exp(2*b*x+2*a
))+1/12*I*b*c/(I+c)*x^4+1/12*Pi*x^3*csgn(I*(2*exp(2*b*x+2*a)*c-2*I)/(exp(2*
b*x+2*a)+1))^3-1/4*I*x^2*polylog(2,-I*c*exp(2*b*x+2*a))/b-1/12*Pi*x^3*csgn(
(2*I*exp(2*b*x+2*a)+2*exp(2*b*x+2*a)*c)/(exp(2*b*x+2*a)+1))^3+1/3*I/b^3*ln(
1+I*c*exp(2*b*x+2*a))*a^3+1/4*I/b^3*polylog(2,-I*c*exp(2*b*x+2*a))*a^2-1/2*
I/b^3*ln(1+I*exp(b*x+a)*(I*c)^(1/2))*a^3+1/12*Pi*x^3*csgn((2*exp(2*b*x+2*a)
*c-2*I)/(exp(2*b*x+2*a)+1))^2+1/6*I*x^3*ln(2*exp(2*b*x+2*a)*c-2*I)-1/6*I*x^
3*ln(2*I*exp(2*b*x+2*a)+2*exp(2*b*x+2*a)*c)+1/12*Pi*x^3*csgn(I/(exp(2*b*x+2
*a)+1))*csgn(I*(2*exp(2*b*x+2*a)*c-2*I))*csgn(I*(2*exp(2*b*x+2*a)*c-2*I)/(e
xp(2*b*x+2*a)+1))-1/12*Pi*x^3*csgn(I*(2*I*exp(2*b*x+2*a)+2*exp(2*b*x+2*a)*c
)/(exp(2*b*x+2*a)+1))*csgn((2*I*exp(2*b*x+2*a)+2*exp(2*b*x+2*a)*c)/(exp(2*b
*x+2*a)+1))-1/2*I/b^3*ln(1-I*exp(b*x+a)*(I*c)^(1/2))*a^3-1/2*I/b^3*a^2*dilo
g(1+I*exp(b*x+a)*(I*c)^(1/2))-1/2*I/b^3*a^2*dilog(1-I*exp(b*x+a)*(I*c)^(1/2
))-1/12*Pi*x^3*csgn(I*(2*exp(2*b*x+2*a)*c-2*I)/(exp(2*b*x+2*a)+1))*csgn((2*
exp(2*b*x+2*a)*c-2*I)/(exp(2*b*x+2*a)+1))^2+1/12*Pi*x^3*csgn(I*(2*I*exp(2*b
*x+2*a)+2*exp(2*b*x+2*a)*c)/(exp(2*b*x+2*a)+1))*csgn((2*I*exp(2*b*x+2*a)+2*
exp(2*b*x+2*a)*c)/(exp(2*b*x+2*a)+1))^2-1/12*Pi*x^3*csgn(I/(exp(2*b*x+2*a)+
1))*csgn(I*(2*exp(2*b*x+2*a)*c-2*I)/(exp(2*b*x+2*a)+1))^2+1/12*Pi*x^3*csgn(
I/(exp(2*b*x+2*a)+1))*csgn(I*(2*I*exp(2*b*x+2*a)+2*exp(2*b*x+2*a)*c)/(exp(2
*b*x+2*a)+1))^2-1/4/b^3/(I+c)*a^4-1/12*b/(I+c)*x^4-1/12*Pi*x^3*csgn((2*exp(
2*b*x+2*a)*c-2*I)/(exp(2*b*x+2*a)+1))^3-1/12*Pi*x^3*csgn(I*(2*exp(2*b*x+2*a
)*c-2*I))*csgn(I*(2*exp(2*b*x+2*a)*c-2*I)/(exp(2*b*x+2*a)+1))^2+1/12*Pi*x^3
*csgn(I*(2*I*exp(2*b*x+2*a)+2*exp(2*b*x+2*a)*c))*csgn(I*(2*I*exp(2*b*x+2*a)
+2*exp(2*b*x+2*a)*c)/(exp(2*b*x+2*a)+1))^2+1/12*Pi*x^3*csgn(I*(2*exp(2*b*x+
2*a)*c-2*I)/(exp(2*b*x+2*a)+1))*csgn((2*exp(2*b*x+2*a)*c-2*I)/(exp(2*b*x+2*
a)+1))-1/12*Pi*x^3*csgn(I/(exp(2*b*x+2*a)+1))*csgn(I*(2*I*exp(2*b*x+2*a)+2*
exp(2*b*x+2*a)*c))*csgn(I*(2*I*exp(2*b*x+2*a)+2*exp(2*b*x+2*a)*c)/(exp(2*b*
x+2*a)+1))+1/4*I/b^3*c/(I+c)*a^4-1/2*I/b^2*ln(1+I*exp(b*x+a)*(I*c)^(1/2))*x
*a^2-1/2*I/b^2*ln(1-I*exp(b*x+a)*(I*c)^(1/2))*x*a^2+1/2*I/b^2*ln(1+I*c*exp(
```

```
2*b*x+2*a))*x*a^2+1/6*I/b^3*a^3*ln(-exp(2*b*x+2*a)*c+I)+1/3/b^3*a^3/(I+c)*l
n(exp(b*x+a))-1/3/b^2/(I+c)*x*a^3+1/12*Pi*x^3*csgn((2*I*exp(2*b*x+2*a)+2*ex
p(2*b*x+2*a)*c)/(exp(2*b*x+2*a)+1))^2-1/12*Pi*x^3*csgn(I*(2*I*exp(2*b*x+2*a
)+2*exp(2*b*x+2*a)*c)/(exp(2*b*x+2*a)+1))^3-1/8*I*polylog(4,-I*c*exp(2*b*x+
2*a))/b^3-1/3*I/b^3*c*a^3/(I+c)*ln(exp(b*x+a))+1/3*I/b^2*c/(I+c)*x*a^3
```

maxima [A] time = 2.10, size = 129, normalized size = 0.91

$$\frac{1}{3}x^3 \operatorname{arccot}\left((c+i)\tanh(bx+a)+c\right)-\frac{4}{9}\left(\frac{3x^4}{4ic-4}-\frac{4b^3x^3\log\left(ice^{(2bx+2a)}+1\right)+6b^2x^2\mathrm{Li}_2\left(-ice^{(2bx+2a)}\right)-6bx}{-2b^4(-ic+1)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*arccot(c+(I+c)*tanh(b*x+a)),x, algorithm="maxima")
```

```
[Out] 1/3*x^3*arccot((c + I)*tanh(b*x + a) + c) - 4/9*(3*x^4/(4*I*c - 4) - (4*b^3
*x^3*log(I*c*e^(2*b*x + 2*a) + 1) + 6*b^2*x^2*dilog(-I*c*e^(2*b*x + 2*a)) -
 6*b*x*polylog(3, -I*c*e^(2*b*x + 2*a)) + 3*polylog(4, -I*c*e^(2*b*x + 2*a)
))/(b^4*(2*I*c - 2)))*b*(c + I)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int x^2 \operatorname{acot}\left(c+\tanh(a+bx)\ (c+1\mathrm{i})\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*acot(c + tanh(a + b*x)*(c + 1i)),x)
```

```
[Out] int(x^2*acot(c + tanh(a + b*x)*(c + 1i)), x)
```

sympy [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: CoercionFailed

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*acot(c+(I+c)*tanh(b*x+a)),x)
```

```
[Out] Exception raised: CoercionFailed
```

3.193 $\int x \cot^{-1}(c + (i + c)\tanh(a + bx))\,dx$

Optimal. Leaf size=113

$$\frac{i\text{Li}_3\left(-ice^{2a+2bx}\right)}{8b^2}-\frac{ix\text{Li}_2\left(-ice^{2a+2bx}\right)}{4b}-\frac{1}{4}ix^2\log\left(1+ice^{2a+2bx}\right)+\frac{1}{2}x^2\cot^{-1}(c+(c+i)\tanh(a+bx))+\frac{1}{6}ibx^3$$

```
[Out] 1/6*I*b*x^3+1/2*x^2*arccot(c+(I+c)*tanh(b*x+a))-1/4*I*x^2*ln(1+I*c*exp(2*b*
x+2*a))-1/4*I*x*polylog(2,-I*c*exp(2*b*x+2*a))/b+1/8*I*polylog(3,-I*c*exp(2
*b*x+2*a))/b^2
```

Rubi [A] time = 0.20, antiderivative size = 113, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.353, Rules used = {5196, 2184, 2190, 2531, 2282, 6589}

$$\frac{i\text{PolyLog}\left(3,-ice^{2a+2bx}\right)}{8b^2}-\frac{ix\text{PolyLog}\left(2,-ice^{2a+2bx}\right)}{4b}-\frac{1}{4}ix^2\log\left(1+ice^{2a+2bx}\right)+\frac{1}{2}x^2\cot^{-1}(c+(c+i)\tanh(a+bx)$$

Antiderivative was successfully verified.

```
[In] Int[x*ArcCot[c + (I + c)*Tanh[a + b*x]],x]
```

```
[Out] (I/6)*b*x^3 + (x^2*ArcCot[c + (I + c)*Tanh[a + b*x]])/2 - (I/4)*x^2*Log[1 +
 I*c*E^(2*a + 2*b*x)] - ((I/4)*x*PolyLog[2, (-I)*c*E^(2*a + 2*b*x)])/b + ((
I/8)*PolyLog[3, (-I)*c*E^(2*a + 2*b*x)])/b^2
```

Rule 2184

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x
_))))^(n_.)), x_Symbol] :> Simp[(c + d*x)^(m + 1)/(a*d*(m + 1)), x] - Dist[
b/a, Int[((c + d*x)^m*(F^(g*(e + f*x)))^n)/(a + b*(F^(g*(e + f*x)))^n), x],
 x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 5196

```
Int[ArcCot[(c_.) + (d_.)*Tanh[(a_.) + (b_.)*(x_)]]*((e_.) + (f_.)*(x_))^(m_
.), x_Symbol] :> Simp[((e + f*x)^(m + 1)*ArcCot[c + d*Tanh[a + b*x]])/(f*(m
```

```
+ 1)), x] + Dist[b/(f*(m + 1)), Int[(e + f*x)^(m + 1)/(c - d + c*E^(2*a +
2*b*x)), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && EqQ[(c - d
)^2, -1]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int x\cot^{-1}(c+(i+c)\tanh(a+bx))\,dx = \frac{1}{2}x^2\cot^{-1}(c+(i+c)\tanh(a+bx))+\frac{1}{2}b\int\frac{x^2}{-i+ce^{2a+2bx}}\,dx$$
$$= \frac{1}{6}ibx^3+\frac{1}{2}x^2\cot^{-1}(c+(i+c)\tanh(a+bx))-\frac{1}{2}(ibc)\int\frac{e^{2a+2bx}x^2}{-i+ce^{2a+2bx}}\,dx$$
$$= \frac{1}{6}ibx^3+\frac{1}{2}x^2\cot^{-1}(c+(i+c)\tanh(a+bx))-\frac{1}{4}ix^2\log\left(1+ice^{2a+2bx}\right)+$$
$$= \frac{1}{6}ibx^3+\frac{1}{2}x^2\cot^{-1}(c+(i+c)\tanh(a+bx))-\frac{1}{4}ix^2\log\left(1+ice^{2a+2bx}\right)-$$
$$= \frac{1}{6}ibx^3+\frac{1}{2}x^2\cot^{-1}(c+(i+c)\tanh(a+bx))-\frac{1}{4}ix^2\log\left(1+ice^{2a+2bx}\right)-$$
$$= \frac{1}{6}ibx^3+\frac{1}{2}x^2\cot^{-1}(c+(i+c)\tanh(a+bx))-\frac{1}{4}ix^2\log\left(1+ice^{2a+2bx}\right)-$$

Mathematica [A] time = 0.09, size = 102, normalized size = 0.90

$$\frac{1}{2}x^2\cot^{-1}(c+(c+i)\tanh(a+bx))-\frac{i\left(2b^2x^2\log\left(1-\frac{ie^{-2(a+bx)}}{c}\right)-2bx\text{Li}_2\left(\frac{ie^{-2(a+bx)}}{c}\right)-\text{Li}_3\left(\frac{ie^{-2(a+bx)}}{c}\right)\right)}{8b^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[x*ArcCot[c + (I + c)*Tanh[a + b*x]],x]
```

```
[Out] (x^2*ArcCot[c + (I + c)*Tanh[a + b*x]])/2 - ((I/8)*(2*b^2*x^2*Log[1 - I/(c*
E^(2*(a + b*x)))] - 2*b*x*PolyLog[2, I/(c*E^(2*(a + b*x)))] - PolyLog[3, I/
(c*E^(2*(a + b*x)))]))/b^2
```

fricas [C] time = 0.43, size = 244, normalized size = 2.16

$$2i\,b^3x^3+3i\,b^2x^2\log\left(\frac{\left(ce^{(2\,bx+2\,a)}-i\right)e^{(-2\,bx-2\,a)}}{c+i}\right)+2i\,a^3-6i\,bx\text{Li}_2\left(\tfrac{1}{2}\,\sqrt{-4i\,c}\,e^{(bx+a)}\right)-6i\,bx\text{Li}_2\left(-\tfrac{1}{2}\,\sqrt{-4i\,c}\,e^{(bx+a)}\right)-3i$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*arccot(c+(I+c)*tanh(b*x+a)),x, algorithm="fricas")
```

```
[Out] 1/12*(2*I*b^3*x^3 + 3*I*b^2*x^2*log((c*e^(2*b*x + 2*a) - I)*e^(-2*b*x - 2*a
)/(c + I)) + 2*I*a^3 - 6*I*b*x*dilog(1/2*sqrt(-4*I*c)*e^(b*x + a)) - 6*I*b*
x*dilog(-1/2*sqrt(-4*I*c)*e^(b*x + a)) - 3*I*a^2*log(1/2*(2*c*e^(b*x + a) +
 I*sqrt(-4*I*c))/c) - 3*I*a^2*log(1/2*(2*c*e^(b*x + a) - I*sqrt(-4*I*c))/c)
 + (-3*I*b^2*x^2 + 3*I*a^2)*log(1/2*sqrt(-4*I*c)*e^(b*x + a) + 1) + (-3*I*b
^2*x^2 + 3*I*a^2)*log(-1/2*sqrt(-4*I*c)*e^(b*x + a) + 1) + 6*I*polylog(3, 1
/2*sqrt(-4*I*c)*e^(b*x + a)) + 6*I*polylog(3, -1/2*sqrt(-4*I*c)*e^(b*x + a)
))/b^2
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x \operatorname{arccot}\left((c+i)\tanh\left(bx+a\right)+c\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*arccot(c+(I+c)*tanh(b*x+a)),x, algorithm="giac")
```

```
[Out] integrate(x*arccot((c + I)*tanh(b*x + a) + c), x)
```

maple [C] time = 5.46, size = 1513, normalized size = 13.39

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*arccot(c+(I+c)*tanh(b*x+a)),x)
```

```
[Out] 1/8*I*polylog(3,-I*c*exp(2*b*x+2*a))/b^2-1/4*I*x^2*ln(1+I*c*exp(2*b*x+2*a))
-1/2/b^2*a^2/(I+c)*ln(exp(b*x+a))-1/4*I/b^2*a^2*ln(-exp(2*b*x+2*a)*c+I)+1/8
*Pi*x^2*csgn(I*(2*exp(2*b*x+2*a)*c-2*I)/(exp(2*b*x+2*a)+1))*csgn((2*exp(2*b
*x+2*a)*c-2*I)/(exp(2*b*x+2*a)+1))-1/4*I*x*polylog(2,-I*c*exp(2*b*x+2*a))/b
-1/8*Pi*x^2*csgn(I*(2*exp(2*b*x+2*a)*c-2*I)/(exp(2*b*x+2*a)+1))*csgn((2*exp
(2*b*x+2*a)*c-2*I)/(exp(2*b*x+2*a)+1))^2+1/8*Pi*x^2*csgn((2*I*exp(2*b*x+2*a
)+2*exp(2*b*x+2*a)*c)/(exp(2*b*x+2*a)+1))^2-1/8*Pi*x^2*csgn(I/(exp(2*b*x+2*
a)+1))*csgn(I*(2*I*exp(2*b*x+2*a)+2*exp(2*b*x+2*a)*c))*csgn(I*(2*I*exp(2*b*
x+2*a)+2*exp(2*b*x+2*a)*c)/(exp(2*b*x+2*a)+1))+1/8*Pi*x^2*csgn(I*(2*exp(2*b
*x+2*a)*c-2*I)/(exp(2*b*x+2*a)+1))^3+1/8*Pi*x^2*csgn((2*exp(2*b*x+2*a)*c-2*
I)/(exp(2*b*x+2*a)+1))^2-1/8*Pi*x^2*csgn(I/(exp(2*b*x+2*a)+1))*csgn(I*(2*ex
p(2*b*x+2*a)*c-2*I)/(exp(2*b*x+2*a)+1))^2+1/8*Pi*x^2*csgn(I/(exp(2*b*x+2*a)
+1))*csgn(I*(2*I*exp(2*b*x+2*a)+2*exp(2*b*x+2*a)*c)/(exp(2*b*x+2*a)+1))^2-1
/8*Pi*x^2*csgn(I*(2*exp(2*b*x+2*a)*c-2*I))*csgn(I*(2*exp(2*b*x+2*a)*c-2*I)/
(exp(2*b*x+2*a)+1))^2+1/8*Pi*x^2*csgn(I*(2*I*exp(2*b*x+2*a)+2*exp(2*b*x+2*a
)*c))*csgn(I*(2*I*exp(2*b*x+2*a)+2*exp(2*b*x+2*a)*c)/(exp(2*b*x+2*a)+1))^2+
1/3/b^2/(I+c)*a^3-1/6*b*x^3/(I+c)-1/2*I/b*c/(I+c)*x*a^2+1/2*I/b^2*c*a^2/(I+
c)*ln(exp(b*x+a))+1/2*I/b^2*a^2*ln(1-I*exp(b*x+a)*(I*c)^(1/2))+1/2*I/b^2*a*
dilog(1+I*exp(b*x+a)*(I*c)^(1/2))+1/2*I/b^2*a*dilog(1-I*exp(b*x+a)*(I*c)^(1
/2))-1/4*I/b^2*ln(1+I*c*exp(2*b*x+2*a))*a^2-1/4*I/b^2*polylog(2,-I*c*exp(2*
b*x+2*a))*a+1/2*I/b^2*a^2*ln(1+I*exp(b*x+a)*(I*c)^(1/2))-1/4*I*x^2*ln(2*I*e
xp(2*b*x+2*a)+2*exp(2*b*x+2*a)*c)+1/4*I*x^2*ln(2*exp(2*b*x+2*a)*c-2*I)-1/2*
I/b*ln(1+I*c*exp(2*b*x+2*a))*x*a+1/2*I/b*a*ln(1+I*exp(b*x+a)*(I*c)^(1/2))*x
+1/2*I/b*a*ln(1-I*exp(b*x+a)*(I*c)^(1/2))*x-1/8*Pi*x^2*csgn(I*(2*I*exp(2*b*
x+2*a)+2*exp(2*b*x+2*a)*c)/(exp(2*b*x+2*a)+1))^3-1/8*Pi*x^2*csgn((2*I*exp(2
*b*x+2*a)+2*exp(2*b*x+2*a)*c)/(exp(2*b*x+2*a)+1))^3-1/3*I/b^2*c/(I+c)*a^3+1
/6*I*b*c/(I+c)*x^3-1/8*Pi*x^2*csgn(I*(2*I*exp(2*b*x+2*a)+2*exp(2*b*x+2*a)*c
)/(exp(2*b*x+2*a)+1))*csgn((2*I*exp(2*b*x+2*a)+2*exp(2*b*x+2*a)*c)/(exp(2*b
*x+2*a)+1))+1/8*Pi*x^2*csgn(I/(exp(2*b*x+2*a)+1))*csgn(I*(2*exp(2*b*x+2*a)*
c-2*I))*csgn(I*(2*exp(2*b*x+2*a)*c-2*I)/(exp(2*b*x+2*a)+1))+1/2/b/(I+c)*x*a
^2+1/8*Pi*x^2*csgn(I*(2*I*exp(2*b*x+2*a)+2*exp(2*b*x+2*a)*c)/(exp(2*b*x+2*a
)+1))*csgn((2*I*exp(2*b*x+2*a)+2*exp(2*b*x+2*a)*c)/(exp(2*b*x+2*a)+1))^2-1/
8*Pi*x^2*csgn((2*exp(2*b*x+2*a)*c-2*I)/(exp(2*b*x+2*a)+1))^3
```

maxima [A] time = 2.02, size = 107, normalized size = 0.95

$$-\left(\frac{2\,x^{3}}{3i\,c-3}-\frac{2\,b^{2}x^{2}\log\left(i\,ce^{(2\,bx+2\,a)}+1\right)+2\,bx\mathrm{Li}_{2}\left(-i\,ce^{(2\,bx+2\,a)}\right)-\mathrm{Li}_{3}(-i\,ce^{(2\,bx+2\,a)})}{-2\,b^{3}(-i\,c+1)}\right)b(c+i)+\frac{1}{2}\,x^{2}\operatorname{arccot}((c$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*arccot(c+(I+c)*tanh(b*x+a)),x, algorithm="maxima")
```

```
[Out] -(2*x^3/(3*I*c - 3) - (2*b^2*x^2*log(I*c*e^(2*b*x + 2*a) + 1) + 2*b*x*dilog
(-I*c*e^(2*b*x + 2*a)) - polylog(3, -I*c*e^(2*b*x + 2*a)))/(b^3*(2*I*c - 2)
))*b*(c + I) + 1/2*x^2*arccot((c + I)*tanh(b*x + a) + c)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int x\,\mathrm{acot}\left(c+\tanh\left(a+b\,x\right)\,\left(c+1\mathrm{i}\right)\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*acot(c + tanh(a + b*x)*(c + 1i)),x)
```

```
[Out] int(x*acot(c + tanh(a + b*x)*(c + 1i)), x)
```

sympy [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: CoercionFailed

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*acot(c+(I+c)*tanh(b*x+a)),x)
```

```
[Out] Exception raised: CoercionFailed
```

3.194 $\int \cot^{-1}(c+(i+c)\tanh(a+bx))\,dx$

Optimal. Leaf size=79

$$-\frac{i\text{Li}_2\left(-ice^{2a+2bx}\right)}{4b}-\frac{1}{2}ix\log\left(1+ice^{2a+2bx}\right)+x\cot^{-1}(c+(c+i)\tanh(a+bx))+\frac{1}{2}ibx^2$$

```
[Out] 1/2*I*b*x^2+x*arccot(c+(I+c)*tanh(b*x+a))-1/2*I*x*ln(1+I*c*exp(2*b*x+2*a))-
1/4*I*polylog(2,-I*c*exp(2*b*x+2*a))/b
```

Rubi [A] time = 0.12, antiderivative size = 79, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333, Rules used = {5188, 2184, 2190, 2279, 2391}

$$-\frac{i\text{PolyLog}\left(2,-ice^{2a+2bx}\right)}{4b}-\frac{1}{2}ix\log\left(1+ice^{2a+2bx}\right)+x\cot^{-1}(c+(c+i)\tanh(a+bx))+\frac{1}{2}ibx^2$$

Antiderivative was successfully verified.

```
[In] Int[ArcCot[c + (I + c)*Tanh[a + b*x]],x]
```

```
[Out] (I/2)*b*x^2 + x*ArcCot[c + (I + c)*Tanh[a + b*x]] - (I/2)*x*Log[1 + I*c*E^(
2*a + 2*b*x)] - ((I/4)*PolyLog[2, (-I)*c*E^(2*a + 2*b*x)])/b
```

Rule 2184

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x
_))))^(n_.)), x_Symbol] :> Simp[(c + d*x)^(m + 1)/(a*d*(m + 1)), x] - Dist[
b/a, Int[((c + d*x)^m*(F^(g*(e + f*x)))^n)/(a + b*(F^(g*(e + f*x)))^n), x],
 x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 5188

```
Int[ArcCot[(c_.) + (d_.)*Tanh[(a_.) + (b_.)*(x_)]], x_Symbol] :> Simp[x*Arc
Cot[c + d*Tanh[a + b*x]], x] + Dist[b, Int[x/(c - d + c*E^(2*a + 2*b*x)), x
], x] /; FreeQ[{a, b, c, d}, x] && EqQ[(c - d)^2, -1]
```

Rubi steps

$$\int \cot^{-1}(c+(i+c)\tanh(a+bx))\,dx = x\cot^{-1}(c+(i+c)\tanh(a+bx)) + b\int \frac{x}{-i+ce^{2a+2bx}}\,dx$$
$$= \frac{1}{2}ibx^2 + x\cot^{-1}(c+(i+c)\tanh(a+bx)) - (ibc)\int \frac{e^{2a+2bx}x}{-i+ce^{2a+2bx}}\,dx$$
$$= \frac{1}{2}ibx^2 + x\cot^{-1}(c+(i+c)\tanh(a+bx)) - \frac{1}{2}ix\log\left(1+ice^{2a+2bx}\right) + \frac{1}{2}i\int$$
$$= \frac{1}{2}ibx^2 + x\cot^{-1}(c+(i+c)\tanh(a+bx)) - \frac{1}{2}ix\log\left(1+ice^{2a+2bx}\right) + \frac{i\,\text{Sub}}{}$$
$$= \frac{1}{2}ibx^2 + x\cot^{-1}(c+(i+c)\tanh(a+bx)) - \frac{1}{2}ix\log\left(1+ice^{2a+2bx}\right) - \frac{i\text{Li}_2(}{}$$

Mathematica [A] time = 0.87, size = 71, normalized size = 0.90

$$x\cot^{-1}(c+(c+i)\tanh(a+bx)) - \frac{i\left(2bx\log\left(1-\frac{ie^{-2(a+bx)}}{c}\right) - \text{Li}_2\left(\frac{ie^{-2(a+bx)}}{c}\right)\right)}{4b}$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcCot[c + (I + c)*Tanh[a + b*x]],x]
```

```
[Out] x*ArcCot[c + (I + c)*Tanh[a + b*x]] - ((I/4)*(2*b*x*Log[1 - I/(c*E^(2*(a +
b*x)))] - PolyLog[2, I/(c*E^(2*(a + b*x)))]))/b
```

fricas [B] time = 0.58, size = 186, normalized size = 2.35

$$\frac{i\,b^2x^2 + i\,bx\log\left(\frac{\left(ce^{(2\,bx+2\,a)}-i\right)e^{(-2\,bx-2\,a)}}{c+i}\right) - i\,a^2 + (-i\,bx-i\,a)\log\left(\frac{1}{2}\sqrt{-4i\,c}\,e^{(bx+a)}+1\right) + (-i\,bx-i\,a)\log\left(-\frac{1}{2}\sqrt{-4i\,c}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(c+(I+c)*tanh(b*x+a)),x, algorithm="fricas")
```

```
[Out] 1/2*(I*b^2*x^2 + I*b*x*log((c*e^(2*b*x + 2*a) - I)*e^(-2*b*x - 2*a)/(c + I)
) - I*a^2 + (-I*b*x - I*a)*log(1/2*sqrt(-4*I*c)*e^(b*x + a) + 1) + (-I*b*x
- I*a)*log(-1/2*sqrt(-4*I*c)*e^(b*x + a) + 1) + I*a*log(1/2*(2*c*e^(b*x + a
) + I*sqrt(-4*I*c))/c) + I*a*log(1/2*(2*c*e^(b*x + a) - I*sqrt(-4*I*c))/c)
- I*dilog(1/2*sqrt(-4*I*c)*e^(b*x + a)) - I*dilog(-1/2*sqrt(-4*I*c)*e^(b*x
+ a)))/b
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \text{arccot}\left((c+i)\tanh\left(bx+a\right)+c\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(c+(I+c)*tanh(b*x+a)),x, algorithm="giac")
```

```
[Out] integrate(arccot((c + I)*tanh(b*x + a) + c), x)
```

maple [B] time = 0.67, size = 1381, normalized size = 17.48

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arccot(c+(I+c)*tanh(b*x+a)),x)
```

```
[Out] 1/(I+c)/b*arccot(c+(I+c)*tanh(b*x+a))/(2*I+2*c)*ln(c-(I+c)*tanh(b*x+a)+I)+1
/4*I/(I+c)^2/b*dilog(-1/2*(-c-(I+c)*tanh(b*x+a)+I)/c)*c^2+1/4*I/(I+c)^2/b*l
n(I+c+(I+c)*tanh(b*x+a))*ln(-1/2*I*(-c-(I+c)*tanh(b*x+a)+I))-1/4*I/(I+c)^2/
b*ln(-1/2*I*(I+c+(I+c)*tanh(b*x+a)))*ln(-1/2*I*(-c-(I+c)*tanh(b*x+a)+I))+1/
4*I/(I+c)^2/b*ln(c-(I+c)*tanh(b*x+a)+I)*ln((-c-(I+c)*tanh(b*x+a)-I)/(-2*I-2
*c))-1/4*I/(I+c)^2/b*ln(c-(I+c)*tanh(b*x+a)+I)*ln(-1/2*(-c-(I+c)*tanh(b*x+a
)+I)/c)+1/8*I/(I+c)^2/b*ln(I+c+(I+c)*tanh(b*x+a))^2*c^2+1/4*I/(I+c)^2/b*dil
og(-1/2*I*(I+c+(I+c)*tanh(b*x+a)))*c^2-2*I/(I+c)/b*arccot(c+(I+c)*tanh(b*x+
a))/(2*I+2*c)*ln(c-(I+c)*tanh(b*x+a)+I)*c+2*I/(I+c)/b*arccot(c+(I+c)*tanh(b
*x+a))/(2*I+2*c)*ln(I+c+(I+c)*tanh(b*x+a))*c-1/4/(I+c)^2/b*ln(I+c+(I+c)*tan
h(b*x+a))^2*c-1/2/(I+c)^2/b*dilog(-1/2*I*(I+c+(I+c)*tanh(b*x+a)))*c+1/2/(I+
c)^2/b*dilog((-c-(I+c)*tanh(b*x+a)-I)/(-2*I-2*c))*c-1/2/(I+c)^2/b*dilog(-1/
2*(-c-(I+c)*tanh(b*x+a)+I)/c)*c-1/4*I/(I+c)^2/b*dilog(-1/2*(-c-(I+c)*tanh(b
*x+a)+I)/c)-1/8*I/(I+c)^2/b*ln(I+c+(I+c)*tanh(b*x+a))^2-1/4*I/(I+c)^2/b*dil
og(-1/2*I*(I+c+(I+c)*tanh(b*x+a)))+1/4*I/(I+c)^2/b*dilog((-c-(I+c)*tanh(b*x
+a)-I)/(-2*I-2*c))-1/(I+c)/b*arccot(c+(I+c)*tanh(b*x+a))/(2*I+2*c)*ln(I+c+(
I+c)*tanh(b*x+a))+1/2/(I+c)^2/b*ln(I+c+(I+c)*tanh(b*x+a))*ln(-1/2*I*(-c-(I+
c)*tanh(b*x+a)+I))*c-1/2/(I+c)^2/b*ln(-1/2*I*(I+c+(I+c)*tanh(b*x+a)))*ln(-1
/2*I*(-c-(I+c)*tanh(b*x+a)+I))*c+1/2/(I+c)^2/b*ln(c-(I+c)*tanh(b*x+a)+I)*ln
((-c-(I+c)*tanh(b*x+a)-I)/(-2*I-2*c))*c-1/2/(I+c)^2/b*ln(c-(I+c)*tanh(b*x+a
)+I)*ln(-1/2*(-c-(I+c)*tanh(b*x+a)+I)/c)*c-1/4*I/(I+c)^2/b*dilog((-c-(I+c)*
tanh(b*x+a)-I)/(-2*I-2*c))*c^2+1/(I+c)/b*arccot(c+(I+c)*tanh(b*x+a))/(2*I+2
*c)*ln(I+c+(I+c)*tanh(b*x+a))*c^2-1/(I+c)/b*arccot(c+(I+c)*tanh(b*x+a))/(2*
I+2*c)*ln(c-(I+c)*tanh(b*x+a)+I)*c^2+1/4*I/(I+c)^2/b*ln(c-(I+c)*tanh(b*x+a)
+I)*ln(-1/2*(-c-(I+c)*tanh(b*x+a)+I)/c)*c^2+1/4*I/(I+c)^2/b*ln(-1/2*I*(I+c+
(I+c)*tanh(b*x+a)))*ln(-1/2*I*(-c-(I+c)*tanh(b*x+a)+I))*c^2-1/4*I/(I+c)^2/b
*ln(c-(I+c)*tanh(b*x+a)+I)*ln((-c-(I+c)*tanh(b*x+a)-I)/(-2*I-2*c))*c^2-1/4*
I/(I+c)^2/b*ln(I+c+(I+c)*tanh(b*x+a))*ln(-1/2*I*(-c-(I+c)*tanh(b*x+a)+I))*c
^2
```

maxima [A] time = 1.99, size = 80, normalized size = 1.01

$$-2\,b(c+i)\left(\frac{2\,x^2}{2i\,c-2}-\frac{2\,bx\log\left(i\,ce^{(2\,bx+2\,a)}+1\right)+\mathrm{Li}_2\left(-i\,ce^{(2\,bx+2\,a)}\right)}{-2\,b^2(-i\,c+1)}\right)+x\,\mathrm{arccot}\left((c+i)\tanh\left(bx+a\right)+c\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(c+(I+c)*tanh(b*x+a)),x, algorithm="maxima")
```

```
[Out] -2*b*(c + I)*(2*x^2/(2*I*c - 2) - (2*b*x*log(I*c*e^(2*b*x + 2*a) + 1) + dil
og(-I*c*e^(2*b*x + 2*a)))/(b^2*(2*I*c - 2))) + x*arccot((c + I)*tanh(b*x +
a) + c)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \mathrm{acot}\left(c+\tanh\left(a+b\,x\right)\,\left(c+1\mathrm{i}\right)\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(acot(c + tanh(a + b*x)*(c + 1i)),x)
```

```
[Out] int(acot(c + tanh(a + b*x)*(c + 1i)), x)
```

sympy [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: CoercionFailed

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(acot(c+(I+c)*tanh(b*x+a)),x)
```

```
[Out] Exception raised: CoercionFailed
```

3.195 $\int \frac{\cot^{-1}(c+(i+c)\tanh(a+bx))}{x}\,dx$

Optimal. Leaf size=22

$$\mathrm{Int}\left(\frac{\cot^{-1}(c+(c+i)\tanh(a+bx))}{x},x\right)$$

```
[Out] CannotIntegrate(arccot(c+(I+c)*tanh(b*x+a))/x,x)
```

Rubi [A] time = 0.09, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\cot^{-1}(c+(i+c)\tanh(a+bx))}{x}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[ArcCot[c + (I + c)*Tanh[a + b*x]]/x,x]
[Out] Defer[Int][ArcCot[c + (I + c)*Tanh[a + b*x]]/x, x]
```

Rubi steps

$$\int \frac{\cot^{-1}(c+(i+c)\tanh(a+bx))}{x}\,dx=\int \frac{\cot^{-1}(c+(i+c)\tanh(a+bx))}{x}\,dx$$

Mathematica [A] time = 3.48, size = 0, normalized size = 0.00

$$\int \frac{\cot^{-1}(c+(i+c)\tanh(a+bx))}{x}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[ArcCot[c + (I + c)*Tanh[a + b*x]]/x,x]
[Out] Integrate[ArcCot[c + (I + c)*Tanh[a + b*x]]/x, x]
```

fricas [A] time = 0.65, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{i\log\left(\frac{\left(ce^{(2\,bx+2\,a)}-i\right)e^{(-2\,bx-2\,a)}}{c+i}\right)}{2\,x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(c+(I+c)*tanh(b*x+a))/x,x, algorithm="fricas")
[Out] integral(1/2*I*log((c*e^(2*b*x + 2*a) - I)*e^(-2*b*x - 2*a)/(c + I))/x, x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\mathrm{arccot}\left((c+i)\tanh\left(bx+a\right)+c\right)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(c+(I+c)*tanh(b*x+a))/x,x, algorithm="giac")
```

```
[Out] integrate(arccot((c + I)*tanh(b*x + a) + c)/x, x)
```

maple [A] time = 1.85, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{arccot}\left(c+(i+c)\tanh\left(bx+a\right)\right)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arccot(c+(I+c)*tanh(b*x+a))/x,x)
```

```
[Out] int(arccot(c+(I+c)*tanh(b*x+a))/x,x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$-i\,bx-\frac{1}{2}\,\pi\log(x)-\frac{1}{4}\left(2\,\pi+4i\,a-2\,\arctan\left(\frac{1}{c}\right)+i\,\log\left(c^2+1\right)\right)\log(x)+\frac{1}{2}\int\frac{\arctan\left(\frac{e^{(-2\,bx-2\,a)}}{c}\right)}{x}\,dx+\frac{1}{4}i\int\frac{\mathrm{lo}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(c+(I+c)*tanh(b*x+a))/x,x, algorithm="maxima")
```

```
[Out] -I*b*x - 1/2*pi*log(x) - 1/4*(2*pi + 4*I*a - 2*arctan(1/c) + I*log(c^2 + 1)
)*log(x) + 1/2*integrate(arctan(e^(-2*b*x - 2*a)/c)/x, x) + 1/4*I*integrate
(log(c^2*e^(4*b*x + 4*a) + 1)/x, x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.05

$$\int \frac{\operatorname{acot}\left(c+\tanh\left(a+b\,x\right)\,\left(c+1\mathrm{i}\right)\right)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(acot(c + tanh(a + b*x)*(c + 1i))/x,x)
```

```
[Out] int(acot(c + tanh(a + b*x)*(c + 1i))/x, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(acot(c+(I+c)*tanh(b*x+a))/x,x)
```

```
[Out] Timed out
```

3.196 $\int x^2 \cot^{-1}(c-(i-c)\tanh(a+bx))\,dx$

Optimal. Leaf size=145

$$\frac{i\text{Li}_4\left(ice^{2a+2bx}\right)}{8b^3}-\frac{ix\text{Li}_3\left(ice^{2a+2bx}\right)}{4b^2}+\frac{ix^2\text{Li}_2\left(ice^{2a+2bx}\right)}{4b}+\frac{1}{6}ix^3\log\left(1-ice^{2a+2bx}\right)+\frac{1}{3}x^3\cot^{-1}(c-(-c+i)\tanh(a+bx))-$$

```
[Out] -1/12*I*b*x^4+1/3*x^3*arccot(c-(I-c)*tanh(b*x+a))+1/6*I*x^3*ln(1-I*c*exp(2*
b*x+2*a))+1/4*I*x^2*polylog(2,I*c*exp(2*b*x+2*a))/b-1/4*I*x*polylog(3,I*c*e
xp(2*b*x+2*a))/b^2+1/8*I*polylog(4,I*c*exp(2*b*x+2*a))/b^3
```

Rubi [A] time = 0.23, antiderivative size = 145, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 7, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.318, Rules used = {5196, 2184, 2190, 2531, 6609, 2282, 6589}

$$-\frac{ix\text{PolyLog}\left(3,ice^{2a+2bx}\right)}{4b^2}+\frac{i\text{PolyLog}\left(4,ice^{2a+2bx}\right)}{8b^3}+\frac{ix^2\text{PolyLog}\left(2,ice^{2a+2bx}\right)}{4b}+\frac{1}{6}ix^3\log\left(1-ice^{2a+2bx}\right)+\frac{1}{3}x^3\cot$$

Antiderivative was successfully verified.

```
[In] Int[x^2*ArcCot[c - (I - c)*Tanh[a + b*x]],x]
```

```
[Out] (-I/12)*b*x^4 + (x^3*ArcCot[c - (I - c)*Tanh[a + b*x]])/3 + (I/6)*x^3*Log[1
 - I*c*E^(2*a + 2*b*x)] + ((I/4)*x^2*PolyLog[2, I*c*E^(2*a + 2*b*x)])/b - (
(I/4)*x*PolyLog[3, I*c*E^(2*a + 2*b*x)])/b^2 + ((I/8)*PolyLog[4, I*c*E^(2*a
 + 2*b*x)])/b^3
```

Rule 2184

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x
_))))^(n_.)), x_Symbol] :> Simp[(c + d*x)^(m + 1)/(a*d*(m + 1)), x] - Dist[
b/a, Int[((c + d*x)^m*(F^(g*(e + f*x)))^n)/(a + b*(F^(g*(e + f*x)))^n), x],
 x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 5196

```
Int[ArcCot[(c_.) + (d_.)*Tanh[(a_.) + (b_.)*(x_)]]*((e_.) + (f_.)*(x_))^(m_
.), x_Symbol] :> Simp[((e + f*x)^(m + 1)*ArcCot[c + d*Tanh[a + b*x]])/(f*(m
 + 1)), x] + Dist[b/(f*(m + 1)), Int[(e + f*x)^(m + 1)/(c - d + c*E^(2*a +
2*b*x)), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && EqQ[(c - d
)^2, -1]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6609

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[((e + f*x)^m*PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p])/(b*c*p*Log[F]), x] - Dist[(f*m)/(b*c*p*Log[F]), Int[(e + f*x)^
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
 d, e, f, n, p}, x] && GtQ[m, 0]
```

Rubi steps

$$\int x^2 \cot^{-1}(c-(i-c)\tanh(a+bx))\,dx = \frac{1}{3}x^3\cot^{-1}(c-(i-c)\tanh(a+bx)) + \frac{1}{3}b\int \frac{x^3}{i+ce^{2a+2bx}}\,dx$$

$$= -\frac{1}{12}ibx^4 + \frac{1}{3}x^3\cot^{-1}(c-(i-c)\tanh(a+bx)) + \frac{1}{3}(ibc)\int \frac{e^{2a+2bx}x^3}{i+ce^{2a+2b}}$$

$$= -\frac{1}{12}ibx^4 + \frac{1}{3}x^3\cot^{-1}(c-(i-c)\tanh(a+bx)) + \frac{1}{6}ix^3\log\left(1-ice^{2a+2}\right.$$

$$= -\frac{1}{12}ibx^4 + \frac{1}{3}x^3\cot^{-1}(c-(i-c)\tanh(a+bx)) + \frac{1}{6}ix^3\log\left(1-ice^{2a+2}\right.$$

$$= -\frac{1}{12}ibx^4 + \frac{1}{3}x^3\cot^{-1}(c-(i-c)\tanh(a+bx)) + \frac{1}{6}ix^3\log\left(1-ice^{2a+2}\right.$$

$$= -\frac{1}{12}ibx^4 + \frac{1}{3}x^3\cot^{-1}(c-(i-c)\tanh(a+bx)) + \frac{1}{6}ix^3\log\left(1-ice^{2a+2}\right.$$

$$= -\frac{1}{12}ibx^4 + \frac{1}{3}x^3\cot^{-1}(c-(i-c)\tanh(a+bx)) + \frac{1}{6}ix^3\log\left(1-ice^{2a+2}\right.$$

Mathematica [A] time = 0.23, size = 128, normalized size = 0.88

$$\frac{i\left(4b^3x^3\log\left(1+\frac{ie^{-2(a+bx)}}{c}\right)-6b^2x^2\mathrm{Li}_2\left(-\frac{ie^{-2(a+bx)}}{c}\right)-6bx\mathrm{Li}_3\left(-\frac{ie^{-2(a+bx)}}{c}\right)-3\mathrm{Li}_4\left(-\frac{ie^{-2(a+bx)}}{c}\right)\right)}{24b^3}+\frac{1}{3}x^3\cot^{-1}(c+(c-i$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*ArcCot[c - (I - c)*Tanh[a + b*x]],x]
```

```
[Out] (x^3*ArcCot[c + (-I + c)*Tanh[a + b*x]])/3 + ((I/24)*(4*b^3*x^3*Log[1 + I/(
c*E^(2*(a + b*x)))] - 6*b^2*x^2*PolyLog[2, (-I)/(c*E^(2*(a + b*x)))] - 6*b*
x*PolyLog[3, (-I)/(c*E^(2*(a + b*x)))] - 3*PolyLog[4, (-I)/(c*E^(2*(a + b*x
)))]))/b^3
```

fricas [C] time = 0.65, size = 290, normalized size = 2.00

$$-i\,b^4x^4+2i\,b^3x^3\log\left(\frac{(c-i)e^{(2\,bx+2\,a)}}{ce^{(2\,bx+2\,a)}+i}\right)+6i\,b^2x^2\mathrm{Li}_2\left(\frac{1}{2}\sqrt{4i\,c}\,e^{(bx+a)}\right)+6i\,b^2x^2\mathrm{Li}_2\left(-\frac{1}{2}\sqrt{4i\,c}\,e^{(bx+a)}\right)+i\,a^4-2i\,a^3\log$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*arccot(c-(I-c)*tanh(b*x+a)),x, algorithm="fricas")
```

```
[Out] 1/12*(-I*b^4*x^4 + 2*I*b^3*x^3*log((c - I)*e^(2*b*x + 2*a)/(c*e^(2*b*x + 2*
a) + I)) + 6*I*b^2*x^2*dilog(1/2*sqrt(4*I*c)*e^(b*x + a)) + 6*I*b^2*x^2*dil
og(-1/2*sqrt(4*I*c)*e^(b*x + a)) + I*a^4 - 2*I*a^3*log(1/2*(2*c*e^(b*x + a)
 + I*sqrt(4*I*c))/c) - 2*I*a^3*log(1/2*(2*c*e^(b*x + a) - I*sqrt(4*I*c))/c)
 - 12*I*b*x*polylog(3, 1/2*sqrt(4*I*c)*e^(b*x + a)) - 12*I*b*x*polylog(3, -
1/2*sqrt(4*I*c)*e^(b*x + a)) + (2*I*b^3*x^3 + 2*I*a^3)*log(1/2*sqrt(4*I*c)*
e^(b*x + a) + 1) + (2*I*b^3*x^3 + 2*I*a^3)*log(-1/2*sqrt(4*I*c)*e^(b*x + a)
 + 1) + 12*I*polylog(4, 1/2*sqrt(4*I*c)*e^(b*x + a)) + 12*I*polylog(4, -1/2
*sqrt(4*I*c)*e^(b*x + a)))/b^3
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^2 \operatorname{arccot}\left((c-i)\tanh\left(bx+a\right)+c\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*arccot(c-(I-c)*tanh(b*x+a)),x, algorithm="giac")
```

```
[Out] integrate(x^2*arccot((c - I)*tanh(b*x + a) + c), x)
```

maple [C] time = 6.24, size = 1570, normalized size = 10.83

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*arccot(c-(I-c)*tanh(b*x+a)),x)
```

```
[Out] 1/6*I*x^3*ln(1-I*c*exp(2*b*x+2*a))+1/6*I*x^3*ln(2*I*exp(2*b*x+2*a)-2*exp(2*
b*x+2*a)*c)+1/2*I/b^2*a^2*ln(1+I*exp(b*x+a)*(-I*c)^(1/2))*x-1/2*I/b^2*ln(1-
I*c*exp(2*b*x+2*a))*x*a^2+1/4*I*x^2*polylog(2,I*c*exp(2*b*x+2*a))/b-1/12*Pi
*x^3*csgn((-2*I*exp(2*b*x+2*a)+2*exp(2*b*x+2*a)*c)/(exp(2*b*x+2*a)+1))^3-1/
4*I*x*polylog(3,I*c*exp(2*b*x+2*a))/b^2+1/8*I*polylog(4,I*c*exp(2*b*x+2*a))
/b^3-1/12*Pi*x^3*csgn((-2*I*exp(2*b*x+2*a)+2*exp(2*b*x+2*a)*c)/(exp(2*b*x+2
*a)+1))^2-1/6*I*x^3*ln(-2*exp(2*b*x+2*a)*c-2*I)+1/3*I/b^2*c/(I-c)*x*a^3-1/3
*I/b^3*c*a^3/(I-c)*ln(exp(b*x+a))-1/12*Pi*x^3*csgn((2*exp(2*b*x+2*a)*c+2*I)
/(exp(2*b*x+2*a)+1))^2-1/4*I/b^3*polylog(2,I*c*exp(2*b*x+2*a))*a^2-1/3*I/b^
3*ln(1-I*c*exp(2*b*x+2*a))*a^3+1/2*I/b^3*a^3*ln(1-I*exp(b*x+a)*(-I*c)^(1/2)
)+1/2*I/b^3*a^3*ln(1+I*exp(b*x+a)*(-I*c)^(1/2))+1/2*I/b^3*a^2*dilog(1-I*exp
(b*x+a)*(-I*c)^(1/2))+1/2*I/b^3*a^2*dilog(1+I*exp(b*x+a)*(-I*c)^(1/2))+1/12
*Pi*x^3*csgn(I*(2*exp(2*b*x+2*a)*c+2*I)/(exp(2*b*x+2*a)+1))^3-1/3/b^3*a^3/(
I-c)*ln(exp(b*x+a))+1/3/b^2/(I-c)*x*a^3+1/3*Pi*x^3+1/4/b^3/(I-c)*a^4+1/12*b
/(I-c)*x^4+1/12*Pi*x^3*csgn(I/(exp(2*b*x+2*a)+1))*csgn(I*(-2*I*exp(2*b*x+2*
a)+2*exp(2*b*x+2*a)*c))*csgn(I*(-2*I*exp(2*b*x+2*a)+2*exp(2*b*x+2*a)*c)/(ex
p(2*b*x+2*a)+1))-1/12*Pi*x^3*csgn(I/(exp(2*b*x+2*a)+1))*csgn(I*(2*exp(2*b*x
+2*a)*c+2*I))*csgn(I*(2*exp(2*b*x+2*a)*c+2*I)/(exp(2*b*x+2*a)+1))+1/12*Pi*x
^3*csgn(I*(-2*I*exp(2*b*x+2*a)+2*exp(2*b*x+2*a)*c))*csgn(I*(-2*I*exp(2*b*x+
2*a)+2*exp(2*b*x+2*a)*c)/(exp(2*b*x+2*a)+1))^2-1/12*Pi*x^3*csgn(I*(2*exp(2*
b*x+2*a)*c+2*I)/(exp(2*b*x+2*a)+1))*csgn((2*exp(2*b*x+2*a)*c+2*I)/(exp(2*b*
x+2*a)+1))^2-1/12*Pi*x^3*csgn(I*(2*exp(2*b*x+2*a)*c+2*I)/(exp(2*b*x+2*a)+1)
)*csgn((2*exp(2*b*x+2*a)*c+2*I)/(exp(2*b*x+2*a)+1))+1/12*Pi*x^3*csgn(I/(exp
(2*b*x+2*a)+1))*csgn(I*(2*exp(2*b*x+2*a)*c+2*I)/(exp(2*b*x+2*a)+1))^2+1/12*
Pi*x^3*csgn(I*(-2*I*exp(2*b*x+2*a)+2*exp(2*b*x+2*a)*c)/(exp(2*b*x+2*a)+1))*
csgn((-2*I*exp(2*b*x+2*a)+2*exp(2*b*x+2*a)*c)/(exp(2*b*x+2*a)+1))^2-1/12*Pi
*x^3*csgn(I/(exp(2*b*x+2*a)+1))*csgn(I*(-2*I*exp(2*b*x+2*a)+2*exp(2*b*x+2*a
)*c)/(exp(2*b*x+2*a)+1))^2+1/12*Pi*x^3*csgn(I*(-2*I*exp(2*b*x+2*a)+2*exp(2*
b*x+2*a)*c)/(exp(2*b*x+2*a)+1))*csgn((-2*I*exp(2*b*x+2*a)+2*exp(2*b*x+2*a)*
```

```
c)/(exp(2*b*x+2*a)+1))-1/6*I/b^3*a^3*ln(exp(2*b*x+2*a)*c+I)+1/4*I/b^3*c/(I-
c)*a^4-1/12*Pi*x^3*csgn(I*(2*exp(2*b*x+2*a)*c+2*I))*csgn(I*(2*exp(2*b*x+2*a
)*c+2*I)/(exp(2*b*x+2*a)+1))^2+1/12*I*b*c/(I-c)*x^4-1/12*Pi*x^3*csgn((2*exp
(2*b*x+2*a)*c+2*I)/(exp(2*b*x+2*a)+1))^3+1/2*I/b^2*a^2*ln(1-I*exp(b*x+a)*(-
I*c)^(1/2))*x-1/12*Pi*x^3*csgn(I*(-2*I*exp(2*b*x+2*a)+2*exp(2*b*x+2*a)*c)/(
exp(2*b*x+2*a)+1))^3
```

maxima [A] time = 2.00, size = 129, normalized size = 0.89

$$\frac{1}{3}\,x^3\,\operatorname{arccot}\left((c-i)\tanh\left(bx+a\right)+c\right)+\frac{4}{9}\left(\frac{3\,x^4}{4i\,c+4}-\frac{4\,b^3x^3\log\left(-i\,ce^{(2\,bx+2\,a)}+1\right)+6\,b^2x^2\mathrm{Li}_2\left(i\,ce^{(2\,bx+2\,a)}\right)-6}{-2\,b^4(-i\,c-1)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*arccot(c-(I-c)*tanh(b*x+a)),x, algorithm="maxima")
```

```
[Out] 1/3*x^3*arccot((c - I)*tanh(b*x + a) + c) + 4/9*(3*x^4/(4*I*c + 4) - (4*b^3
*x^3*log(-I*c*e^(2*b*x + 2*a) + 1) + 6*b^2*x^2*dilog(I*c*e^(2*b*x + 2*a)) -
 6*b*x*polylog(3, I*c*e^(2*b*x + 2*a)) + 3*polylog(4, I*c*e^(2*b*x + 2*a)))
/(b^4*(2*I*c + 2)))*b*(c - I)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int x^2\,\mathrm{acot}\left(c+\tanh\left(a+b\,x\right)\,\left(c-\mathrm{i}\right)\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*acot(c + tanh(a + b*x)*(c - 1i)),x)
```

```
[Out] int(x^2*acot(c + tanh(a + b*x)*(c - 1i)), x)
```

sympy [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: CoercionFailed

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*acot(c-(I-c)*tanh(b*x+a)),x)
```

```
[Out] Exception raised: CoercionFailed
```

3.197 $\int x \cot^{-1}(c-(i-c)\tanh(a+bx))\,dx$

Optimal. Leaf size=116

$$-\frac{i\text{Li}_3\left(ice^{2a+2bx}\right)}{8b^2}+\frac{ix\text{Li}_2\left(ice^{2a+2bx}\right)}{4b}+\frac{1}{4}ix^2\log\left(1-ice^{2a+2bx}\right)+\frac{1}{2}x^2\cot^{-1}(c-(-c+i)\tanh(a+bx))-\frac{1}{6}ibx^3$$

```
[Out] -1/6*I*b*x^3+1/2*x^2*arccot(c-(I-c)*tanh(b*x+a))+1/4*I*x^2*ln(1-I*c*exp(2*b
*x+2*a))+1/4*I*x*polylog(2,I*c*exp(2*b*x+2*a))/b-1/8*I*polylog(3,I*c*exp(2*
b*x+2*a))/b^2
```

Rubi [A] time = 0.19, antiderivative size = 116, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.300, Rules used = {5196, 2184, 2190, 2531, 2282, 6589}

$$-\frac{i\text{PolyLog}\left(3,ice^{2a+2bx}\right)}{8b^2}+\frac{ix\text{PolyLog}\left(2,ice^{2a+2bx}\right)}{4b}+\frac{1}{4}ix^2\log\left(1-ice^{2a+2bx}\right)+\frac{1}{2}x^2\cot^{-1}(c-(-c+i)\tanh(a+bx))-\frac{1}{6}$$

Antiderivative was successfully verified.

```
[In] Int[x*ArcCot[c - (I - c)*Tanh[a + b*x]],x]
```

```
[Out] (-I/6)*b*x^3 + (x^2*ArcCot[c - (I - c)*Tanh[a + b*x]])/2 + (I/4)*x^2*Log[1
- I*c*E^(2*a + 2*b*x)] + ((I/4)*x*PolyLog[2, I*c*E^(2*a + 2*b*x)])/b - ((I/
8)*PolyLog[3, I*c*E^(2*a + 2*b*x)])/b^2
```

Rule 2184

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x
_))))^(n_.)), x_Symbol] :> Simp[(c + d*x)^(m + 1)/(a*d*(m + 1)), x] - Dist[
b/a, Int[((c + d*x)^m*(F^(g*(e + f*x)))^n)/(a + b*(F^(g*(e + f*x)))^n), x],
 x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 5196

```
Int[ArcCot[(c_.) + (d_.)*Tanh[(a_.) + (b_.)*(x_)]]*((e_.) + (f_.)*(x_))^(m_
.), x_Symbol] :> Simp[((e + f*x)^(m + 1)*ArcCot[c + d*Tanh[a + b*x]])/(f*(m
```

```
 + 1)), x] + Dist[b/(f*(m + 1)), Int[(e + f*x)^(m + 1)/(c - d + c*E^(2*a +
2*b*x)), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && EqQ[(c - d
)^2, -1]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int x\cot^{-1}(c-(i-c)\tanh(a+bx))\,dx = \frac{1}{2}x^2\cot^{-1}(c-(i-c)\tanh(a+bx))+\frac{1}{2}b\int\frac{x^2}{i+ce^{2a+2bx}}\,dx$$
$$= -\frac{1}{6}ibx^3+\frac{1}{2}x^2\cot^{-1}(c-(i-c)\tanh(a+bx))+\frac{1}{2}(ibc)\int\frac{e^{2a+2bx}x^2}{i+ce^{2a+2bx}}$$
$$= -\frac{1}{6}ibx^3+\frac{1}{2}x^2\cot^{-1}(c-(i-c)\tanh(a+bx))+\frac{1}{4}ix^2\log\left(1-ice^{2a+2bx}\right.$$
$$= -\frac{1}{6}ibx^3+\frac{1}{2}x^2\cot^{-1}(c-(i-c)\tanh(a+bx))+\frac{1}{4}ix^2\log\left(1-ice^{2a+2bx}\right.$$
$$= -\frac{1}{6}ibx^3+\frac{1}{2}x^2\cot^{-1}(c-(i-c)\tanh(a+bx))+\frac{1}{4}ix^2\log\left(1-ice^{2a+2bx}\right.$$
$$= -\frac{1}{6}ibx^3+\frac{1}{2}x^2\cot^{-1}(c-(i-c)\tanh(a+bx))+\frac{1}{4}ix^2\log\left(1-ice^{2a+2bx}\right.$$

Mathematica [A] time = 0.12, size = 102, normalized size = 0.88

$$\frac{i\left(2b^2x^2\log\left(1+\frac{ie^{-2(a+bx)}}{c}\right)-2bx\text{Li}_2\left(-\frac{ie^{-2(a+bx)}}{c}\right)-\text{Li}_3\left(-\frac{ie^{-2(a+bx)}}{c}\right)\right)}{8b^2}+\frac{1}{2}x^2\cot^{-1}(c+(c-i)\tanh(a+bx))$$

Antiderivative was successfully verified.

```
[In] Integrate[x*ArcCot[c - (I - c)*Tanh[a + b*x]],x]
```

```
[Out] (x^2*ArcCot[c + (-I + c)*Tanh[a + b*x]])/2 + ((I/8)*(2*b^2*x^2*Log[1 + I/(c
*E^(2*(a + b*x)))] - 2*b*x*PolyLog[2, (-I)/(c*E^(2*(a + b*x)))] - PolyLog[3
, (-I)/(c*E^(2*(a + b*x)))]))/b^2
```

fricas [C] time = 0.66, size = 244, normalized size = 2.10

$$\frac{-2i\,b^3x^3+3i\,b^2x^2\log\left(\frac{(c-i)e^{(2\,bx+2\,a)}}{ce^{(2\,bx+2\,a)}+i}\right)-2i\,a^3+6i\,bx\text{Li}_2\left(\frac{1}{2}\,\sqrt{4i\,c}\,e^{(bx+a)}\right)+6i\,bx\text{Li}_2\left(-\frac{1}{2}\,\sqrt{4i\,c}\,e^{(bx+a)}\right)+3i\,a^2\log}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*arccot(c-(I-c)*tanh(b*x+a)),x, algorithm="fricas")
```

```
[Out] 1/12*(-2*I*b^3*x^3 + 3*I*b^2*x^2*log((c - I)*e^(2*b*x + 2*a)/(c*e^(2*b*x +
2*a) + I)) - 2*I*a^3 + 6*I*b*x*dilog(1/2*sqrt(4*I*c)*e^(b*x + a)) + 6*I*b*x
*dilog(-1/2*sqrt(4*I*c)*e^(b*x + a)) + 3*I*a^2*log(1/2*(2*c*e^(b*x + a) + I
*sqrt(4*I*c))/c) + 3*I*a^2*log(1/2*(2*c*e^(b*x + a) - I*sqrt(4*I*c))/c) + (
3*I*b^2*x^2 - 3*I*a^2)*log(1/2*sqrt(4*I*c)*e^(b*x + a) + 1) + (3*I*b^2*x^2
- 3*I*a^2)*log(-1/2*sqrt(4*I*c)*e^(b*x + a) + 1) - 6*I*polylog(3, 1/2*sqrt(
4*I*c)*e^(b*x + a)) - 6*I*polylog(3, -1/2*sqrt(4*I*c)*e^(b*x + a)))/b^2
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x \operatorname{arccot}\left((c-i)\tanh\left(bx+a\right)+c\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*arccot(c-(I-c)*tanh(b*x+a)),x, algorithm="giac")
```

```
[Out] integrate(x*arccot((c - I)*tanh(b*x + a) + c), x)
```

maple [C] time = 5.44, size = 1534, normalized size = 13.22

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*arccot(c-(I-c)*tanh(b*x+a)),x)
```

```
[Out] 1/4*I*x^2*ln(1-I*c*exp(2*b*x+2*a))+1/4*I*x*polylog(2,I*c*exp(2*b*x+2*a))/b+
1/2/b^2*a^2/(I-c)*ln(exp(b*x+a))-1/2/b/(I-c)*x*a^2-1/8*Pi*x^2*csgn(I*(2*exp
(2*b*x+2*a)*c+2*I))*csgn(I*(2*exp(2*b*x+2*a)*c+2*I)/(exp(2*b*x+2*a)+1))^2-1
/8*Pi*x^2*csgn((2*exp(2*b*x+2*a)*c+2*I)/(exp(2*b*x+2*a)+1))^2-1/2*I/b^2*a*d
ilog(1-I*exp(b*x+a)*(-I*c)^(1/2))+1/4*I/b^2*ln(1-I*c*exp(2*b*x+2*a))*a^2+1/
4*I/b^2*polylog(2,I*c*exp(2*b*x+2*a))*a-1/2*I/b^2*ln(1-I*exp(b*x+a)*(-I*c)^
(1/2))*a^2-1/2*I/b^2*a*dilog(1+I*exp(b*x+a)*(-I*c)^(1/2))-1/8*Pi*x^2*csgn(I
*(2*exp(2*b*x+2*a)*c+2*I)/(exp(2*b*x+2*a)+1))*csgn((2*exp(2*b*x+2*a)*c+2*I)
/(exp(2*b*x+2*a)+1))+1/8*Pi*x^2*csgn(I*(-2*I*exp(2*b*x+2*a)+2*exp(2*b*x+2*a
)*c))*csgn(I*(-2*I*exp(2*b*x+2*a)+2*exp(2*b*x+2*a)*c)/(exp(2*b*x+2*a)+1))^2
-1/8*Pi*x^2*csgn(I*(2*exp(2*b*x+2*a)*c+2*I)/(exp(2*b*x+2*a)+1))*csgn((2*exp
(2*b*x+2*a)*c+2*I)/(exp(2*b*x+2*a)+1))^2-1/2*I/b^2*a^2*ln(1+I*exp(b*x+a)*(-
I*c)^(1/2))+1/2*I/b^2*c*a^2/(I-c)*ln(exp(b*x+a))-1/8*Pi*x^2*csgn((-2*I*exp(
2*b*x+2*a)+2*exp(2*b*x+2*a)*c)/(exp(2*b*x+2*a)+1))^3-1/8*Pi*x^2*csgn((2*exp
(2*b*x+2*a)*c+2*I)/(exp(2*b*x+2*a)+1))^3-1/4*I*x^2*ln(-2*exp(2*b*x+2*a)*c-2
*I)+1/2*Pi*x^2+1/8*Pi*x^2*csgn(I*(-2*I*exp(2*b*x+2*a)+2*exp(2*b*x+2*a)*c)/(
exp(2*b*x+2*a)+1))*csgn((-2*I*exp(2*b*x+2*a)+2*exp(2*b*x+2*a)*c)/(exp(2*b*x
+2*a)+1))^2+1/4*I/b^2*a^2*ln(exp(2*b*x+2*a)*c+I)+1/8*Pi*x^2*csgn(I/(exp(2*b
*x+2*a)+1))*csgn(I*(2*exp(2*b*x+2*a)*c+2*I)/(exp(2*b*x+2*a)+1))^2+1/8*Pi*x^
2*csgn(I/(exp(2*b*x+2*a)+1))*csgn(I*(-2*I*exp(2*b*x+2*a)+2*exp(2*b*x+2*a)*c
))*csgn(I*(-2*I*exp(2*b*x+2*a)+2*exp(2*b*x+2*a)*c)/(exp(2*b*x+2*a)+1))+1/4*
I*x^2*ln(2*I*exp(2*b*x+2*a)-2*exp(2*b*x+2*a)*c)-1/8*Pi*x^2*csgn(I/(exp(2*b*
x+2*a)+1))*csgn(I*(-2*I*exp(2*b*x+2*a)+2*exp(2*b*x+2*a)*c)/(exp(2*b*x+2*a)+
1))^2+1/2*I/b*ln(1-I*c*exp(2*b*x+2*a))*x*a-1/2*I/b*a*ln(1-I*exp(b*x+a)*(-I*
c)^(1/2))*x-1/2*I/b*a*ln(1+I*exp(b*x+a)*(-I*c)^(1/2))*x-1/8*Pi*x^2*csgn(I/(
exp(2*b*x+2*a)+1))*csgn(I*(2*exp(2*b*x+2*a)*c+2*I))*csgn(I*(2*exp(2*b*x+2*a
)*c+2*I)/(exp(2*b*x+2*a)+1))-1/2*I/b*c/(I-c)*x*a^2+1/8*Pi*x^2*csgn(I*(-2*I*
exp(2*b*x+2*a)+2*exp(2*b*x+2*a)*c)/(exp(2*b*x+2*a)+1))*csgn((-2*I*exp(2*b*x
+2*a)+2*exp(2*b*x+2*a)*c)/(exp(2*b*x+2*a)+1))-1/8*I*polylog(3,I*c*exp(2*b*x
+2*a))/b^2-1/3*I/b^2*c/(I-c)*a^3+1/6*I*b*c/(I-c)*x^3-1/3/b^2/(I-c)*a^3+1/6*
b*x^3/(I-c)+1/8*Pi*x^2*csgn(I*(2*exp(2*b*x+2*a)*c+2*I)/(exp(2*b*x+2*a)+1))^
3-1/8*Pi*x^2*csgn(I*(-2*I*exp(2*b*x+2*a)+2*exp(2*b*x+2*a)*c)/(exp(2*b*x+2*a
)+1))^3-1/8*Pi*x^2*csgn((-2*I*exp(2*b*x+2*a)+2*exp(2*b*x+2*a)*c)/(exp(2*b*x
+2*a)+1))^2
```

maxima [A] time = 2.02, size = 106, normalized size = 0.91

$$\left(\frac{2\,x^{3}}{3i\,c+3}-\frac{2\,b^{2}x^{2}\log\left(-i\,ce^{(2\,bx+2\,a)}+1\right)+2\,bx\mathrm{Li}_2\left(i\,ce^{(2\,bx+2\,a)}\right)-\mathrm{Li}_3(i\,ce^{(2\,bx+2\,a)})}{-2\,b^{3}(-i\,c-1)}\right)b(c-i)+\frac{1}{2}\,x^{2}\operatorname{arccot}\left((c-i)\right.\text{ta}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*arccot(c-(I-c)*tanh(b*x+a)),x, algorithm="maxima")
```

```
[Out] (2*x^3/(3*I*c + 3) - (2*b^2*x^2*log(-I*c*e^(2*b*x + 2*a) + 1) + 2*b*x*dilog
(I*c*e^(2*b*x + 2*a)) - polylog(3, I*c*e^(2*b*x + 2*a)))/(b^3*(2*I*c + 2)))
*b*(c - I) + 1/2*x^2*arccot((c - I)*tanh(b*x + a) + c)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int x \operatorname{acot}(c + \tanh(a + b x)\ (c - i))\ dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*acot(c + tanh(a + b*x)*(c - 1i)),x)
```

```
[Out] int(x*acot(c + tanh(a + b*x)*(c - 1i)), x)
```

sympy [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: CoercionFailed

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*acot(c-(I-c)*tanh(b*x+a)),x)
```

```
[Out] Exception raised: CoercionFailed
```

3.198 $\int \cot^{-1}(c-(i-c)\tanh(a+bx))\,dx$

Optimal. Leaf size=82

$$\frac{i\text{Li}_2\left(ice^{2a+2bx}\right)}{4b}+\frac{1}{2}ix\log\left(1-ice^{2a+2bx}\right)+x\cot^{-1}(c-(-c+i)\tanh(a+bx))-\frac{1}{2}ibx^2$$

```
[Out] -1/2*I*b*x^2+x*arccot(c-(I-c)*tanh(b*x+a))+1/2*I*x*ln(1-I*c*exp(2*b*x+2*a))
+1/4*I*polylog(2,I*c*exp(2*b*x+2*a))/b
```

Rubi [A] time = 0.12, antiderivative size = 82, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.278, Rules used = {5188, 2184, 2190, 2279, 2391}

$$\frac{i\text{PolyLog}\left(2,ice^{2a+2bx}\right)}{4b}+\frac{1}{2}ix\log\left(1-ice^{2a+2bx}\right)+x\cot^{-1}(c-(-c+i)\tanh(a+bx))-\frac{1}{2}ibx^2$$

Antiderivative was successfully verified.

```
[In] Int[ArcCot[c - (I - c)*Tanh[a + b*x]],x]
```

```
[Out] (-I/2)*b*x^2 + x*ArcCot[c - (I - c)*Tanh[a + b*x]] + (I/2)*x*Log[1 - I*c*E^
(2*a + 2*b*x)] + ((I/4)*PolyLog[2, I*c*E^(2*a + 2*b*x)])/b
```

Rule 2184

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x
_))))^(n_.)), x_Symbol] :> Simp[(c + d*x)^(m + 1)/(a*d*(m + 1)), x] - Dist[
b/a, Int[((c + d*x)^m*(F^(g*(e + f*x)))^n)/(a + b*(F^(g*(e + f*x)))^n), x],
 x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 5188

```
Int[ArcCot[(c_.) + (d_.)*Tanh[(a_.) + (b_.)*(x_)]], x_Symbol] :> Simp[x*Arc
Cot[c + d*Tanh[a + b*x]], x] + Dist[b, Int[x/(c - d + c*E^(2*a + 2*b*x)), x
], x] /; FreeQ[{a, b, c, d}, x] && EqQ[(c - d)^2, -1]
```

Rubi steps

$$\int \cot^{-1}(c-(i-c)\tanh(a+bx))\,dx = x\cot^{-1}(c-(i-c)\tanh(a+bx)) + b\int \frac{x}{i+ce^{2a+2bx}}\,dx$$
$$= -\frac{1}{2}ibx^2 + x\cot^{-1}(c-(i-c)\tanh(a+bx)) + (ibc)\int \frac{e^{2a+2bx}x}{i+ce^{2a+2bx}}\,dx$$
$$= -\frac{1}{2}ibx^2 + x\cot^{-1}(c-(i-c)\tanh(a+bx)) + \frac{1}{2}ix\log\left(1-ice^{2a+2bx}\right) - \frac{1}{2}$$
$$= -\frac{1}{2}ibx^2 + x\cot^{-1}(c-(i-c)\tanh(a+bx)) + \frac{1}{2}ix\log\left(1-ice^{2a+2bx}\right) - $$
$$= -\frac{1}{2}ibx^2 + x\cot^{-1}(c-(i-c)\tanh(a+bx)) + \frac{1}{2}ix\log\left(1-ice^{2a+2bx}\right) + $$

Mathematica [A] time = 0.78, size = 71, normalized size = 0.87

$$\frac{i\left(2bx\log\left(1+\frac{ie^{-2(a+bx)}}{c}\right)-\text{Li}_2\left(-\frac{ie^{-2(a+bx)}}{c}\right)\right)}{4b} + x\cot^{-1}(c+(c-i)\tanh(a+bx))$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcCot[c - (I - c)*Tanh[a + b*x]],x]
```

```
[Out] x*ArcCot[c + (-I + c)*Tanh[a + b*x]] + ((I/4)*(2*b*x*Log[1 + I/(c*E^(2*(a +
 b*x)))] - PolyLog[2, (-I)/(c*E^(2*(a + b*x)))]))/b
```

fricas [B] time = 0.74, size = 186, normalized size = 2.27

$$\frac{-i\,b^2x^2 + i\,bx\log\left(\frac{(c-i)e^{(2\,bx+2\,a)}}{ce^{(2\,bx+2\,a)}+i}\right) + i\,a^2 + (i\,bx+i\,a)\log\left(\frac{1}{2}\,\sqrt{4i\,c}\,e^{(bx+a)}+1\right) + (i\,bx+i\,a)\log\left(-\frac{1}{2}\,\sqrt{4i\,c}\,e^{(bx+a)}+\right.}{2\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(c-(I-c)*tanh(b*x+a)),x, algorithm="fricas")
```

```
[Out] 1/2*(-I*b^2*x^2 + I*b*x*log((c - I)*e^(2*b*x + 2*a)/(c*e^(2*b*x + 2*a) + I)
) + I*a^2 + (I*b*x + I*a)*log(1/2*sqrt(4*I*c)*e^(b*x + a) + 1) + (I*b*x + I
*a)*log(-1/2*sqrt(4*I*c)*e^(b*x + a) + 1) - I*a*log(1/2*(2*c*e^(b*x + a) +
I*sqrt(4*I*c))/c) - I*a*log(1/2*(2*c*e^(b*x + a) - I*sqrt(4*I*c))/c) + I*di
log(1/2*sqrt(4*I*c)*e^(b*x + a)) + I*dilog(-1/2*sqrt(4*I*c)*e^(b*x + a)))/b
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \operatorname{arccot}\left((c-i)\tanh\left(bx+a\right)+c\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(c-(I-c)*tanh(b*x+a)),x, algorithm="giac")
```

```
[Out] integrate(arccot((c - I)*tanh(b*x + a) + c), x)
```

maple [B] time = 0.55, size = 1351, normalized size = 16.48

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arccot(c-(I-c)*tanh(b*x+a)),x)
```

```
[Out] -1/b/(c-I)*arccot((c-I)*tanh(b*x+a)+c)/(2*I-2*c)*ln((c-I)*tanh(b*x+a)-c+I)+
1/b/(c-I)*arccot((c-I)*tanh(b*x+a)+c)/(2*I-2*c)*ln((c-I)*tanh(b*x+a)+c-I)-1
/2/b/(c-I)/(I-c)*dilog(-1/2*I*(I+(c-I)*tanh(b*x+a)+c))*c+1/4/b/(c-I)/(I-c)*
ln((c-I)*tanh(b*x+a)+c-I)^2*c+1/2/b/(c-I)/(I-c)*dilog(1/2*(I+(c-I)*tanh(b*x
+a)+c)/c)*c+1/4*I/b/(c-I)/(I-c)*dilog(((c-I)*tanh(b*x+a)+c-I)/(-2*I+2*c))+1
/4*I/b/(c-I)/(I-c)*dilog(-1/2*I*(I+(c-I)*tanh(b*x+a)+c))-1/8*I/b/(c-I)/(I-c
)*ln((c-I)*tanh(b*x+a)+c-I)^2-1/4*I/b/(c-I)/(I-c)*dilog(1/2*(I+(c-I)*tanh(b
*x+a)+c)/c)-1/2/b/(c-I)/(I-c)*dilog(((c-I)*tanh(b*x+a)+c-I)/(-2*I+2*c))*c-1
/4*I/b/(c-I)/(I-c)*ln((c-I)*tanh(b*x+a)+c-I)*ln(-1/2*I*(I+(c-I)*tanh(b*x+a)
+c))*c^2+1/4*I/b/(c-I)/(I-c)*ln((c-I)*tanh(b*x+a)-c+I)*ln(1/2*(I+(c-I)*tanh
(b*x+a)+c)/c)*c^2-1/4*I/b/(c-I)/(I-c)*ln((c-I)*tanh(b*x+a)-c+I)*ln(((c-I)*t
anh(b*x+a)+c-I)/(-2*I+2*c))*c^2+2*I/b/(c-I)*arccot((c-I)*tanh(b*x+a)+c)/(2*
I-2*c)*ln((c-I)*tanh(b*x+a)+c-I)*c-2*I/b/(c-I)*arccot((c-I)*tanh(b*x+a)+c)/
(2*I-2*c)*ln((c-I)*tanh(b*x+a)-c+I)*c-1/2/b/(c-I)/(I-c)*ln((c-I)*tanh(b*x+a
)+c-I)*ln(-1/2*I*(I+(c-I)*tanh(b*x+a)+c))*c-1/4*I/b/(c-I)/(I-c)*dilog(((c-I
)*tanh(b*x+a)+c-I)/(-2*I+2*c))*c^2+1/b/(c-I)*arccot((c-I)*tanh(b*x+a)+c)/(2
*I-2*c)*ln((c-I)*tanh(b*x+a)-c+I)*c^2+1/2/b/(c-I)/(I-c)*ln((c-I)*tanh(b*x+a
)-c+I)*ln(1/2*(I+(c-I)*tanh(b*x+a)+c)/c)*c-1/2/b/(c-I)/(I-c)*ln((c-I)*tanh(
b*x+a)-c+I)*ln(((c-I)*tanh(b*x+a)+c-I)/(-2*I+2*c))*c-1/b/(c-I)*arccot((c-I)
*tanh(b*x+a)+c)/(2*I-2*c)*ln((c-I)*tanh(b*x+a)+c-I)*c^2+1/4*I/b/(c-I)/(I-c)
*ln((c-I)*tanh(b*x+a)-c+I)*ln(((c-I)*tanh(b*x+a)+c-I)/(-2*I+2*c))-1/4*I/b/(
c-I)/(I-c)*dilog(-1/2*I*(I+(c-I)*tanh(b*x+a)+c))*c^2+1/8*I/b/(c-I)/(I-c)*ln
((c-I)*tanh(b*x+a)+c-I)^2*c^2+1/4*I/b/(c-I)/(I-c)*dilog(1/2*(I+(c-I)*tanh(b
*x+a)+c)/c)*c^2+1/4*I/b/(c-I)/(I-c)*ln((c-I)*tanh(b*x+a)+c-I)*ln(-1/2*I*(I+
(c-I)*tanh(b*x+a)+c))-1/4*I/b/(c-I)/(I-c)*ln((c-I)*tanh(b*x+a)-c+I)*ln(1/2*
(I+(c-I)*tanh(b*x+a)+c)/c)
```

maxima [A] time = 2.01, size = 80, normalized size = 0.98

$$2\,b(c-i)\left(\frac{2\,x^2}{2i\,c+2}-\frac{2\,bx\log\left(-i\,ce^{(2\,bx+2\,a)}+1\right)+\mathrm{Li}_2\left(i\,ce^{(2\,bx+2\,a)}\right)}{-2\,b^2(-i\,c-1)}\right)+x\,\mathrm{arccot}\left((c-i)\tanh\left(bx+a\right)+c\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(c-(I-c)*tanh(b*x+a)),x, algorithm="maxima")
```

```
[Out] 2*b*(c - I)*(2*x^2/(2*I*c + 2) - (2*b*x*log(-I*c*e^(2*b*x + 2*a) + 1) + dil
og(I*c*e^(2*b*x + 2*a)))/(b^2*(2*I*c + 2))) + x*arccot((c - I)*tanh(b*x + a
) + c)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \mathrm{acot}\left(c+\tanh\left(a+b\,x\right)\,\left(c-\mathrm{i}\right)\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(acot(c + tanh(a + b*x)*(c - 1i)),x)
```

```
[Out] int(acot(c + tanh(a + b*x)*(c - 1i)), x)
```

sympy [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: CoercionFailed

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(acot(c-(I-c)*tanh(b*x+a)),x)
```

```
[Out] Exception raised: CoercionFailed
```

3.199 $\int \frac{\cot^{-1}(c-(i-c)\tanh(a+bx))}{x}\,dx$

Optimal. Leaf size=25

$$\mathrm{Int}\left(\frac{\cot^{-1}(c-(-c+i)\tanh(a+bx))}{x},x\right)$$

```
[Out] CannotIntegrate(arccot(c-(I-c)*tanh(b*x+a))/x,x)
```

Rubi [A] time = 0.09, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\cot^{-1}(c-(i-c)\tanh(a+bx))}{x}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[ArcCot[c - (I - c)*Tanh[a + b*x]]/x,x]
[Out] Defer[Int][ArcCot[c - (I - c)*Tanh[a + b*x]]/x, x]
```

Rubi steps

$$\int \frac{\cot^{-1}(c-(i-c)\tanh(a+bx))}{x}\,dx = \int \frac{\cot^{-1}(c-(i-c)\tanh(a+bx))}{x}\,dx$$

Mathematica [A] time = 3.47, size = 0, normalized size = 0.00

$$\int \frac{\cot^{-1}(c-(i-c)\tanh(a+bx))}{x}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[ArcCot[c - (I - c)*Tanh[a + b*x]]/x,x]
[Out] Integrate[ArcCot[c - (I - c)*Tanh[a + b*x]]/x, x]
```

fricas [A] time = 0.74, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{i\log\left(\frac{(c-i)e^{(2bx+2a)}}{ce^{(2bx+2a)}+i}\right)}{2x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(c-(I-c)*tanh(b*x+a))/x,x, algorithm="fricas")
[Out] integral(1/2*I*log((c - I)*e^(2*b*x + 2*a)/(c*e^(2*b*x + 2*a) + I))/x, x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{arccot}((c-i)\tanh(bx+a)+c)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(c-(I-c)*tanh(b*x+a))/x,x, algorithm="giac")
```

```
[Out] integrate(arccot((c - I)*tanh(b*x + a) + c)/x, x)
```

maple [A] time = 1.94, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{arccot}\left(c-(i-c)\tanh\left(bx+a\right)\right)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arccot(c-(I-c)*tanh(b*x+a))/x,x)
```

```
[Out] int(arccot(c-(I-c)*tanh(b*x+a))/x,x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$i\,bx-\frac{1}{4}\left(-4i\,a-2\,\arctan\left(\frac{1}{c}\right)-i\,\log\left(c^2+1\right)\right)\log(x)+\frac{1}{2}\int\frac{\arctan\left(\frac{e^{(-2\,bx-2\,a)}}{c}\right)}{x}\,dx-\frac{1}{4}i\int\frac{\log\left(c^2e^{(4\,bx+4\,a)}+1\right)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(c-(I-c)*tanh(b*x+a))/x,x, algorithm="maxima")
```

```
[Out] I*b*x - 1/4*(-4*I*a - 2*arctan(1/c) - I*log(c^2 + 1))*log(x) + 1/2*integrat
e(arctan(e^(-2*b*x - 2*a)/c)/x, x) - 1/4*I*integrate(log(c^2*e^(4*b*x + 4*a
) + 1)/x, x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{\operatorname{acot}\left(c+\tanh\left(a+b\,x\right)\,\left(c-\mathrm{i}\right)\right)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(acot(c + tanh(a + b*x)*(c - 1i))/x,x)
```

```
[Out] int(acot(c + tanh(a + b*x)*(c - 1i))/x, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(acot(c-(I-c)*tanh(b*x+a))/x,x)
```

```
[Out] Timed out
```

3.200 $\int (e+fx)^3 \cot^{-1}(\coth(a+bx))\,dx$

Optimal. Leaf size=299

$$-\frac{3if^3\text{Li}_5\left(-ie^{2a+2bx}\right)}{16b^4}+\frac{3if^3\text{Li}_5\left(ie^{2a+2bx}\right)}{16b^4}+\frac{3if^2(e+fx)\text{Li}_4\left(-ie^{2a+2bx}\right)}{8b^3}-\frac{3if^2(e+fx)\text{Li}_4\left(ie^{2a+2bx}\right)}{8b^3}-\frac{3if(e+fx}{}$$

```
[Out] 1/4*(f*x+e)^4*arccot(coth(b*x+a))/f-1/4*(f*x+e)^4*arctan(exp(2*b*x+2*a))/f+
1/4*I*(f*x+e)^3*polylog(2,-I*exp(2*b*x+2*a))/b-1/4*I*(f*x+e)^3*polylog(2,I*
exp(2*b*x+2*a))/b-3/8*I*f*(f*x+e)^2*polylog(3,-I*exp(2*b*x+2*a))/b^2+3/8*I*
f*(f*x+e)^2*polylog(3,I*exp(2*b*x+2*a))/b^2+3/8*I*f^2*(f*x+e)*polylog(4,-I*
exp(2*b*x+2*a))/b^3-3/8*I*f^2*(f*x+e)*polylog(4,I*exp(2*b*x+2*a))/b^3-3/16*
I*f^3*polylog(5,-I*exp(2*b*x+2*a))/b^4+3/16*I*f^3*polylog(5,I*exp(2*b*x+2*a
))/b^4
```

Rubi [A] time = 0.21, antiderivative size = 299, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 6, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.400, Rules used = {5186, 4180, 2531, 6609, 2282, 6589}

$$\frac{3if^2(e+fx)\text{PolyLog}\left(4,-ie^{2a+2bx}\right)}{8b^3}-\frac{3if^2(e+fx)\text{PolyLog}\left(4,ie^{2a+2bx}\right)}{8b^3}-\frac{3if(e+fx)^2\text{PolyLog}\left(3,-ie^{2a+2bx}\right)}{8b^2}+$$

Antiderivative was successfully verified.

```
[In] Int[(e + f*x)^3*ArcCot[Coth[a + b*x]],x]
```

```
[Out] ((e + f*x)^4*ArcCot[Coth[a + b*x]])/(4*f) - ((e + f*x)^4*ArcTan[E^(2*a + 2*
b*x)])/(4*f) + ((I/4)*(e + f*x)^3*PolyLog[2, (-I)*E^(2*a + 2*b*x)])/b - ((I
/4)*(e + f*x)^3*PolyLog[2, I*E^(2*a + 2*b*x)])/b - (((3*I)/8)*f*(e + f*x)^2
*PolyLog[3, (-I)*E^(2*a + 2*b*x)])/b^2 + (((3*I)/8)*f*(e + f*x)^2*PolyLog[3
, I*E^(2*a + 2*b*x)])/b^2 + (((3*I)/8)*f^2*(e + f*x)*PolyLog[4, (-I)*E^(2*a
 + 2*b*x)])/b^3 - (((3*I)/8)*f^2*(e + f*x)*PolyLog[4, I*E^(2*a + 2*b*x)])/b
^3 - (((3*I)/16)*f^3*PolyLog[5, (-I)*E^(2*a + 2*b*x)])/b^4 + (((3*I)/16)*f^
3*PolyLog[5, I*E^(2*a + 2*b*x)])/b^4
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 4180

```
Int[csc[(e_.) + Pi*(k_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_
))^(m_.), x_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)/E^(
I*k*Pi)])/(f*fz*I), x] + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1
 - E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x] + Dist[(d*m)/(f*fz*I), Int[(c +
d*x)^(m - 1)*Log[1 + E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x]) /; FreeQ[{c,
d, e, f, fz}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 5186

```
Int[ArcCot[Coth[(a_.) + (b_.)*(x_)]]*((e_.) + (f_.)*(x_))^(m_.), x_Symbol]
:> Simp[((e + f*x)^(m + 1)*ArcCot[Coth[a + b*x]])/(f*(m + 1)), x] - Dist[b/
(f*(m + 1)), Int[(e + f*x)^(m + 1)*Sech[2*a + 2*b*x], x], x] /; FreeQ[{a, b
, e, f}, x] && IGtQ[m, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6609

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[((e + f*x)^m*PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p])/(b*c*p*Log[F]), x] - Dist[(f*m)/(b*c*p*Log[F]), Int[(e + f*x)^
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
 d, e, f, n, p}, x] && GtQ[m, 0]
```

Rubi steps

$$\int (e+fx)^3\cot^{-1}(\coth(a+bx))\,dx=\frac{(e+fx)^4\cot^{-1}(\coth(a+bx))}{4f}-\frac{b\int (e+fx)^4\text{sech}(2a+2bx)\,dx}{4f}$$

$$=\frac{(e+fx)^4\cot^{-1}(\coth(a+bx))}{4f}-\frac{(e+fx)^4\tan^{-1}\left(e^{2a+2bx}\right)}{4f}+\frac{1}{2}i\int (e+fx)^3$$

$$=\frac{(e+fx)^4\cot^{-1}(\coth(a+bx))}{4f}-\frac{(e+fx)^4\tan^{-1}\left(e^{2a+2bx}\right)}{4f}+\frac{i(e+fx)^3\text{Li}_2\left(\cdot\right.}{4b}$$

$$=\frac{(e+fx)^4\cot^{-1}(\coth(a+bx))}{4f}-\frac{(e+fx)^4\tan^{-1}\left(e^{2a+2bx}\right)}{4f}+\frac{i(e+fx)^3\text{Li}_2\left(\cdot\right.}{4b}$$

$$=\frac{(e+fx)^4\cot^{-1}(\coth(a+bx))}{4f}-\frac{(e+fx)^4\tan^{-1}\left(e^{2a+2bx}\right)}{4f}+\frac{i(e+fx)^3\text{Li}_2\left(\cdot\right.}{4b}$$

$$=\frac{(e+fx)^4\cot^{-1}(\coth(a+bx))}{4f}-\frac{(e+fx)^4\tan^{-1}\left(e^{2a+2bx}\right)}{4f}+\frac{i(e+fx)^3\text{Li}_2\left(\cdot\right.}{4b}$$

$$=\frac{(e+fx)^4\cot^{-1}(\coth(a+bx))}{4f}-\frac{(e+fx)^4\tan^{-1}\left(e^{2a+2bx}\right)}{4f}+\frac{i(e+fx)^3\text{Li}_2\left(\cdot\right.}{4b}$$

Mathematica [B] time = 0.37, size = 600, normalized size = 2.01

$$\frac{1}{4}x\left(4e^3+6e^2fx+4ef^2x^2+f^3x^3\right)\cot^{-1}(\coth(a+bx))-\frac{i\left(8b^4e^3x\log\left(1-ie^{2(a+bx)}\right)-8b^4e^3x\log\left(1+ie^{2(a+bx)}\right)+1\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(e + f*x)^3*ArcCot[Coth[a + b*x]],x]
```

```
[Out] (x*(4*e^3 + 6*e^2*f*x + 4*e*f^2*x^2 + f^3*x^3)*ArcCot[Coth[a + b*x]])/4 - (
(I/16)*(8*b^4*e^3*x*Log[1 - I*E^(2*(a + b*x))] + 12*b^4*e^2*f*x^2*Log[1 - I
*E^(2*(a + b*x))] + 8*b^4*e*f^2*x^3*Log[1 - I*E^(2*(a + b*x))] + 2*b^4*f^3*
x^4*Log[1 - I*E^(2*(a + b*x))] - 8*b^4*e^3*x*Log[1 + I*E^(2*(a + b*x))] - 1
2*b^4*e^2*f*x^2*Log[1 + I*E^(2*(a + b*x))] - 8*b^4*e*f^2*x^3*Log[1 + I*E^(2
*(a + b*x))] - 2*b^4*f^3*x^4*Log[1 + I*E^(2*(a + b*x))] - 4*b^3*(e + f*x)^3
```

```
*PolyLog[2, (-I)*E^(2*(a + b*x))] + 4*b^3*(e + f*x)^3*PolyLog[2, I*E^(2*(a
+ b*x))] + 6*b^2*e^2*f*PolyLog[3, (-I)*E^(2*(a + b*x))] + 12*b^2*e*f^2*x*Po
lyLog[3, (-I)*E^(2*(a + b*x))] + 6*b^2*f^3*x^2*PolyLog[3, (-I)*E^(2*(a + b*
x))] - 6*b^2*e^2*f*PolyLog[3, I*E^(2*(a + b*x))] - 12*b^2*e*f^2*x*PolyLog[3
, I*E^(2*(a + b*x))] - 6*b^2*f^3*x^2*PolyLog[3, I*E^(2*(a + b*x))] - 6*b*e*
f^2*PolyLog[4, (-I)*E^(2*(a + b*x))] - 6*b*f^3*x*PolyLog[4, (-I)*E^(2*(a +
b*x))] + 6*b*e*f^2*PolyLog[4, I*E^(2*(a + b*x))] + 6*b*f^3*x*PolyLog[4, I*E
^(2*(a + b*x))] + 3*f^3*PolyLog[5, (-I)*E^(2*(a + b*x))] - 3*f^3*PolyLog[5,
 I*E^(2*(a + b*x))]))/b^4
```

fricas [C] time = 0.75, size = 1448, normalized size = 4.84

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*arccot(coth(b*x+a)),x, algorithm="fricas")
```

```
[Out] 1/8*(24*I*f^3*polylog(5, 1/2*sqrt(4*I)*(cosh(b*x + a) + sinh(b*x + a))) + 2
4*I*f^3*polylog(5, -1/2*sqrt(4*I)*(cosh(b*x + a) + sinh(b*x + a))) - 24*I*f
^3*polylog(5, 1/2*sqrt(-4*I)*(cosh(b*x + a) + sinh(b*x + a))) - 24*I*f^3*po
lylog(5, -1/2*sqrt(-4*I)*(cosh(b*x + a) + sinh(b*x + a))) + 2*(b^4*f^3*x^4
+ 4*b^4*e*f^2*x^3 + 6*b^4*e^2*f*x^2 + 4*b^4*e^3*x)*arctan(sinh(b*x + a)/cos
h(b*x + a)) + (-4*I*b^3*f^3*x^3 - 12*I*b^3*e*f^2*x^2 - 12*I*b^3*e^2*f*x - 4
*I*b^3*e^3)*dilog(1/2*sqrt(4*I)*(cosh(b*x + a) + sinh(b*x + a))) + (-4*I*b^
3*f^3*x^3 - 12*I*b^3*e*f^2*x^2 - 12*I*b^3*e^2*f*x - 4*I*b^3*e^3)*dilog(-1/2
*sqrt(4*I)*(cosh(b*x + a) + sinh(b*x + a))) + (4*I*b^3*f^3*x^3 + 12*I*b^3*e
*f^2*x^2 + 12*I*b^3*e^2*f*x + 4*I*b^3*e^3)*dilog(1/2*sqrt(-4*I)*(cosh(b*x +
 a) + sinh(b*x + a))) + (4*I*b^3*f^3*x^3 + 12*I*b^3*e*f^2*x^2 + 12*I*b^3*e^
2*f*x + 4*I*b^3*e^3)*dilog(-1/2*sqrt(-4*I)*(cosh(b*x + a) + sinh(b*x + a)))
 + (-I*b^4*f^3*x^4 - 4*I*b^4*e*f^2*x^3 - 6*I*b^4*e^2*f*x^2 - 4*I*b^4*e^3*x
- 4*I*a*b^3*e^3 + 6*I*a^2*b^2*e^2*f - 4*I*a^3*b*e*f^2 + I*a^4*f^3)*log(1/2*
sqrt(4*I)*(cosh(b*x + a) + sinh(b*x + a)) + 1) + (-I*b^4*f^3*x^4 - 4*I*b^4*
e*f^2*x^3 - 6*I*b^4*e^2*f*x^2 - 4*I*b^4*e^3*x - 4*I*a*b^3*e^3 + 6*I*a^2*b^2
*e^2*f - 4*I*a^3*b*e*f^2 + I*a^4*f^3)*log(-1/2*sqrt(4*I)*(cosh(b*x + a) + s
inh(b*x + a)) + 1) + (I*b^4*f^3*x^4 + 4*I*b^4*e*f^2*x^3 + 6*I*b^4*e^2*f*x^2
 + 4*I*b^4*e^3*x + 4*I*a*b^3*e^3 - 6*I*a^2*b^2*e^2*f + 4*I*a^3*b*e*f^2 - I*
a^4*f^3)*log(1/2*sqrt(-4*I)*(cosh(b*x + a) + sinh(b*x + a)) + 1) + (I*b^4*f
^3*x^4 + 4*I*b^4*e*f^2*x^3 + 6*I*b^4*e^2*f*x^2 + 4*I*b^4*e^3*x + 4*I*a*b^3*
e^3 - 6*I*a^2*b^2*e^2*f + 4*I*a^3*b*e*f^2 - I*a^4*f^3)*log(-1/2*sqrt(-4*I)*
(cosh(b*x + a) + sinh(b*x + a)) + 1) + (4*I*a*b^3*e^3 - 6*I*a^2*b^2*e^2*f +
 4*I*a^3*b*e*f^2 - I*a^4*f^3)*log(I*sqrt(4*I) + 2*cosh(b*x + a) + 2*sinh(b*
x + a)) + (4*I*a*b^3*e^3 - 6*I*a^2*b^2*e^2*f + 4*I*a^3*b*e*f^2 - I*a^4*f^3)
*log(-I*sqrt(4*I) + 2*cosh(b*x + a) + 2*sinh(b*x + a)) + (-4*I*a*b^3*e^3 +
6*I*a^2*b^2*e^2*f - 4*I*a^3*b*e*f^2 + I*a^4*f^3)*log(I*sqrt(-4*I) + 2*cosh(
b*x + a) + 2*sinh(b*x + a)) + (-4*I*a*b^3*e^3 + 6*I*a^2*b^2*e^2*f - 4*I*a^3
*b*e*f^2 + I*a^4*f^3)*log(-I*sqrt(-4*I) + 2*cosh(b*x + a) + 2*sinh(b*x + a)
) + (-24*I*b*f^3*x - 24*I*b*e*f^2)*polylog(4, 1/2*sqrt(4*I)*(cosh(b*x + a)
+ sinh(b*x + a))) + (-24*I*b*f^3*x - 24*I*b*e*f^2)*polylog(4, -1/2*sqrt(4*I
)*(cosh(b*x + a) + sinh(b*x + a))) + (24*I*b*f^3*x + 24*I*b*e*f^2)*polylog(
4, 1/2*sqrt(-4*I)*(cosh(b*x + a) + sinh(b*x + a))) + (24*I*b*f^3*x + 24*I*b
*e*f^2)*polylog(4, -1/2*sqrt(-4*I)*(cosh(b*x + a) + sinh(b*x + a))) + (12*I
*b^2*f^3*x^2 + 24*I*b^2*e*f^2*x + 12*I*b^2*e^2*f)*polylog(3, 1/2*sqrt(4*I)*
(cosh(b*x + a) + sinh(b*x + a))) + (12*I*b^2*f^3*x^2 + 24*I*b^2*e*f^2*x + 1
2*I*b^2*e^2*f)*polylog(3, -1/2*sqrt(4*I)*(cosh(b*x + a) + sinh(b*x + a))) +
 (-12*I*b^2*f^3*x^2 - 24*I*b^2*e*f^2*x - 12*I*b^2*e^2*f)*polylog(3, 1/2*sqr
t(-4*I)*(cosh(b*x + a) + sinh(b*x + a))) + (-12*I*b^2*f^3*x^2 - 24*I*b^2*e*
f^2*x - 12*I*b^2*e^2*f)*polylog(3, -1/2*sqrt(-4*I)*(cosh(b*x + a) + sinh(b*
x + a))))/b^4
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*arccot(coth(b*x+a)),x, algorithm="giac")
[Out] Timed out
```

maple [C] time = 51.06, size = 7275, normalized size = 24.33

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^3*arccot(coth(b*x+a)),x)
[Out] result too large to display
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{4}\left(f^3x^4 + 4\,ef^2x^3 + 6\,e^2fx^2 + 4\,e^3x\right)\arctan\left(\frac{e^{(2\,bx+2\,a)}-1}{e^{(2\,bx+2\,a)}+1}\right) - \int \frac{\left(bf^3x^4e^{(2\,a)} + 4\,bef^2x^3e^{(2\,a)} + 6\,be^2fx^2e^{(2\,a)} + 4\,be\right.}{2\left(e^{(4\,bx+4\,a)}+1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^3*arccot(coth(b*x+a)),x, algorithm="maxima")
[Out] 1/4*(f^3*x^4 + 4*e*f^2*x^3 + 6*e^2*f*x^2 + 4*e^3*x)*arctan((e^(2*b*x + 2*a)
 - 1)/(e^(2*b*x + 2*a) + 1)) - integrate(1/2*(b*f^3*x^4*e^(2*a) + 4*b*e*f^2
*x^3*e^(2*a) + 6*b*e^2*f*x^2*e^(2*a) + 4*b*e^3*x*e^(2*a))*e^(2*b*x)/(e^(4*b
*x + 4*a) + 1), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \mathrm{acot}\left(\coth\left(a+b\,x\right)\right)\,{\left(e+f\,x\right)}^3 \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(acot(coth(a + b*x))*(e + f*x)^3,x)
[Out] int(acot(coth(a + b*x))*(e + f*x)^3, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(e + f x\right)^{3} \operatorname{acot}{\left(\coth{\left(a + b x \right)} \right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**3*acot(coth(b*x+a)),x)
[Out] Integral((e + f*x)**3*acot(coth(a + b*x)), x)
```

3.201 $\int (e+fx)^2 \cot^{-1}(\coth(a+bx))\,dx$

Optimal. Leaf size=229

$$\frac{if^2\text{Li}_4\left(-ie^{2a+2bx}\right)}{8b^3}-\frac{if^2\text{Li}_4\left(ie^{2a+2bx}\right)}{8b^3}-\frac{if(e+fx)\text{Li}_3\left(-ie^{2a+2bx}\right)}{4b^2}+\frac{if(e+fx)\text{Li}_3\left(ie^{2a+2bx}\right)}{4b^2}+\frac{i(e+fx)^2\text{Li}_2\left(-ie^{2a}\right.}{4b}$$

```
[Out] 1/3*(f*x+e)^3*arccot(coth(b*x+a))/f-1/3*(f*x+e)^3*arctan(exp(2*b*x+2*a))/f+
1/4*I*(f*x+e)^2*polylog(2,-I*exp(2*b*x+2*a))/b-1/4*I*(f*x+e)^2*polylog(2,I*
exp(2*b*x+2*a))/b-1/4*I*f*(f*x+e)*polylog(3,-I*exp(2*b*x+2*a))/b^2+1/4*I*f*
(f*x+e)*polylog(3,I*exp(2*b*x+2*a))/b^2+1/8*I*f^2*polylog(4,-I*exp(2*b*x+2*
a))/b^3-1/8*I*f^2*polylog(4,I*exp(2*b*x+2*a))/b^3
```

Rubi [A] time = 0.15, antiderivative size = 229, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 6, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.400, Rules used = {5186, 4180, 2531, 6609, 2282, 6589}

$$-\frac{if(e+fx)\text{PolyLog}\left(3,-ie^{2a+2bx}\right)}{4b^2}+\frac{if(e+fx)\text{PolyLog}\left(3,ie^{2a+2bx}\right)}{4b^2}+\frac{if^2\text{PolyLog}\left(4,-ie^{2a+2bx}\right)}{8b^3}-\frac{if^2\text{PolyLog}}{8}$$

Antiderivative was successfully verified.

```
[In] Int[(e + f*x)^2*ArcCot[Coth[a + b*x]],x]
```

```
[Out] ((e + f*x)^3*ArcCot[Coth[a + b*x]])/(3*f) - ((e + f*x)^3*ArcTan[E^(2*a + 2*
b*x)])/(3*f) + ((I/4)*(e + f*x)^2*PolyLog[2, (-I)*E^(2*a + 2*b*x)])/b - ((I
/4)*(e + f*x)^2*PolyLog[2, I*E^(2*a + 2*b*x)])/b - ((I/4)*f*(e + f*x)*PolyL
og[3, (-I)*E^(2*a + 2*b*x)])/b^2 + ((I/4)*f*(e + f*x)*PolyLog[3, I*E^(2*a +
 2*b*x)])/b^2 + ((I/8)*f^2*PolyLog[4, (-I)*E^(2*a + 2*b*x)])/b^3 - ((I/8)*f
^2*PolyLog[4, I*E^(2*a + 2*b*x)])/b^3
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 4180

```
Int[csc[(e_.) + Pi*(k_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_
))^(m_.), x_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)/E^(
I*k*Pi)])/(f*fz*I), x] + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1
 - E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x] + Dist[(d*m)/(f*fz*I), Int[(c +
d*x)^(m - 1)*Log[1 + E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x]) /; FreeQ[{c,
d, e, f, fz}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 5186

```
Int[ArcCot[Coth[(a_.) + (b_.)*(x_)]]*((e_.) + (f_.)*(x_))^(m_.), x_Symbol]
:> Simp[((e + f*x)^(m + 1)*ArcCot[Coth[a + b*x]])/(f*(m + 1)), x] - Dist[b/
```

```
(f*(m + 1)), Int[(e + f*x)^(m + 1)*Sech[2*a + 2*b*x], x], x] /; FreeQ[{a, b
, e, f}, x] && IGtQ[m, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6609

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[((e + f*x)^m*PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p])/(b*c*p*Log[F]), x] - Dist[(f*m)/(b*c*p*Log[F]), Int[(e + f*x)^
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
 d, e, f, n, p}, x] && GtQ[m, 0]
```

Rubi steps

$$\int (e+fx)^2 \cot^{-1}(\coth(a+bx))\,dx = \frac{(e+fx)^3\cot^{-1}(\coth(a+bx))}{3f} - \frac{b\int (e+fx)^3\text{sech}(2a+2bx)\,dx}{3f}$$
$$= \frac{(e+fx)^3\cot^{-1}(\coth(a+bx))}{3f} - \frac{(e+fx)^3\tan^{-1}\left(e^{2a+2bx}\right)}{3f} + \frac{1}{2}i\int (e+fx)^2$$
$$= \frac{(e+fx)^3\cot^{-1}(\coth(a+bx))}{3f} - \frac{(e+fx)^3\tan^{-1}\left(e^{2a+2bx}\right)}{3f} + \frac{i(e+fx)^2\text{Li}_2\left(\cdot\right.}{4b}$$
$$= \frac{(e+fx)^3\cot^{-1}(\coth(a+bx))}{3f} - \frac{(e+fx)^3\tan^{-1}\left(e^{2a+2bx}\right)}{3f} + \frac{i(e+fx)^2\text{Li}_2\left(\cdot\right.}{4b}$$
$$= \frac{(e+fx)^3\cot^{-1}(\coth(a+bx))}{3f} - \frac{(e+fx)^3\tan^{-1}\left(e^{2a+2bx}\right)}{3f} + \frac{i(e+fx)^2\text{Li}_2\left(\cdot\right.}{4b}$$
$$= \frac{(e+fx)^3\cot^{-1}(\coth(a+bx))}{3f} - \frac{(e+fx)^3\tan^{-1}\left(e^{2a+2bx}\right)}{3f} + \frac{i(e+fx)^2\text{Li}_2\left(\cdot\right.}{4b}$$

Mathematica [A] time = 0.22, size = 375, normalized size = 1.64

$$\frac{1}{3}x\left(3e^2+3efx+f^2x^2\right)\cot^{-1}(\coth(a+bx)) - \frac{i\left(12b^3e^2x\log\left(1-ie^{2(a+bx)}\right) - 12b^3e^2x\log\left(1+ie^{2(a+bx)}\right) + 12b^3efx^2\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(e + f*x)^2*ArcCot[Coth[a + b*x]],x]
```

```
[Out] (x*(3*e^2 + 3*e*f*x + f^2*x^2)*ArcCot[Coth[a + b*x]])/3 - ((I/24)*(12*b^3*e
^2*x*Log[1 - I*E^(2*(a + b*x))] + 12*b^3*e*f*x^2*Log[1 - I*E^(2*(a + b*x))]
 + 4*b^3*f^2*x^3*Log[1 - I*E^(2*(a + b*x))] - 12*b^3*e^2*x*Log[1 + I*E^(2*(
a + b*x))] - 12*b^3*e*f*x^2*Log[1 + I*E^(2*(a + b*x))] - 4*b^3*f^2*x^3*Log[
1 + I*E^(2*(a + b*x))] - 6*b^2*(e + f*x)^2*PolyLog[2, (-I)*E^(2*(a + b*x))]
 + 6*b^2*(e + f*x)^2*PolyLog[2, I*E^(2*(a + b*x))] + 6*b*e*f*PolyLog[3, (-I
)*E^(2*(a + b*x))] + 6*b*f^2*x*PolyLog[3, (-I)*E^(2*(a + b*x))] - 6*b*e*f*P
olyLog[3, I*E^(2*(a + b*x))] - 6*b*f^2*x*PolyLog[3, I*E^(2*(a + b*x))] - 3*
f^2*PolyLog[4, (-I)*E^(2*(a + b*x))] + 3*f^2*PolyLog[4, I*E^(2*(a + b*x))])
)/b^3
```

fricas [C] time = 0.84, size = 994, normalized size = 4.34

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*arccot(coth(b*x+a)),x, algorithm="fricas")
```

```
[Out] 1/6*(-6*I*f^2*polylog(4, 1/2*sqrt(4*I)*(cosh(b*x + a) + sinh(b*x + a))) - 6
*I*f^2*polylog(4, -1/2*sqrt(4*I)*(cosh(b*x + a) + sinh(b*x + a))) + 6*I*f^2
*polylog(4, 1/2*sqrt(-4*I)*(cosh(b*x + a) + sinh(b*x + a))) + 6*I*f^2*polyl
og(4, -1/2*sqrt(-4*I)*(cosh(b*x + a) + sinh(b*x + a))) + 2*(b^3*f^2*x^3 + 3
*b^3*e*f*x^2 + 3*b^3*e^2*x)*arctan(sinh(b*x + a)/cosh(b*x + a)) + (-3*I*b^2
*f^2*x^2 - 6*I*b^2*e*f*x - 3*I*b^2*e^2)*dilog(1/2*sqrt(4*I)*(cosh(b*x + a)
+ sinh(b*x + a))) + (-3*I*b^2*f^2*x^2 - 6*I*b^2*e*f*x - 3*I*b^2*e^2)*dilog(
-1/2*sqrt(4*I)*(cosh(b*x + a) + sinh(b*x + a))) + (3*I*b^2*f^2*x^2 + 6*I*b^
2*e*f*x + 3*I*b^2*e^2)*dilog(1/2*sqrt(-4*I)*(cosh(b*x + a) + sinh(b*x + a))
) + (3*I*b^2*f^2*x^2 + 6*I*b^2*e*f*x + 3*I*b^2*e^2)*dilog(-1/2*sqrt(-4*I)*(
cosh(b*x + a) + sinh(b*x + a))) + (-I*b^3*f^2*x^3 - 3*I*b^3*e*f*x^2 - 3*I*b
^3*e^2*x - 3*I*a*b^2*e^2 + 3*I*a^2*b*e*f - I*a^3*f^2)*log(1/2*sqrt(4*I)*(co
sh(b*x + a) + sinh(b*x + a)) + 1) + (-I*b^3*f^2*x^3 - 3*I*b^3*e*f*x^2 - 3*I
*b^3*e^2*x - 3*I*a*b^2*e^2 + 3*I*a^2*b*e*f - I*a^3*f^2)*log(-1/2*sqrt(4*I)*
(cosh(b*x + a) + sinh(b*x + a)) + 1) + (I*b^3*f^2*x^3 + 3*I*b^3*e*f*x^2 + 3
*I*b^3*e^2*x + 3*I*a*b^2*e^2 - 3*I*a^2*b*e*f + I*a^3*f^2)*log(1/2*sqrt(-4*I
)*(cosh(b*x + a) + sinh(b*x + a)) + 1) + (I*b^3*f^2*x^3 + 3*I*b^3*e*f*x^2 +
 3*I*b^3*e^2*x + 3*I*a*b^2*e^2 - 3*I*a^2*b*e*f + I*a^3*f^2)*log(-1/2*sqrt(-
4*I)*(cosh(b*x + a) + sinh(b*x + a)) + 1) + (3*I*a*b^2*e^2 - 3*I*a^2*b*e*f
+ I*a^3*f^2)*log(I*sqrt(4*I) + 2*cosh(b*x + a) + 2*sinh(b*x + a)) + (3*I*a*
b^2*e^2 - 3*I*a^2*b*e*f + I*a^3*f^2)*log(-I*sqrt(4*I) + 2*cosh(b*x + a) + 2
*sinh(b*x + a)) + (-3*I*a*b^2*e^2 + 3*I*a^2*b*e*f - I*a^3*f^2)*log(I*sqrt(-
4*I) + 2*cosh(b*x + a) + 2*sinh(b*x + a)) + (-3*I*a*b^2*e^2 + 3*I*a^2*b*e*f
 - I*a^3*f^2)*log(-I*sqrt(-4*I) + 2*cosh(b*x + a) + 2*sinh(b*x + a)) + (6*I
*b*f^2*x + 6*I*b*e*f)*polylog(3, 1/2*sqrt(4*I)*(cosh(b*x + a) + sinh(b*x +
a))) + (6*I*b*f^2*x + 6*I*b*e*f)*polylog(3, -1/2*sqrt(4*I)*(cosh(b*x + a) +
 sinh(b*x + a))) + (-6*I*b*f^2*x - 6*I*b*e*f)*polylog(3, 1/2*sqrt(-4*I)*(co
sh(b*x + a) + sinh(b*x + a))) + (-6*I*b*f^2*x - 6*I*b*e*f)*polylog(3, -1/2*
sqrt(-4*I)*(cosh(b*x + a) + sinh(b*x + a))))/b^3
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*arccot(coth(b*x+a)),x, algorithm="giac")
```

```
[Out] Timed out
```

maple [C] time = 41.30, size = 5425, normalized size = 23.69

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)^2*arccot(coth(b*x+a)),x)
```

```
[Out] result too large to display
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{3}\left(f^2x^3 + 3\,efx^2 + 3\,e^2x\right)\arctan\left(\frac{e^{(2\,bx+2\,a)}-1}{e^{(2\,bx+2\,a)}+1}\right)-\int\frac{2\left(bf^2x^3e^{(2\,a)} + 3\,befx^2e^{(2\,a)} + 3\,be^2xe^{(2\,a)}\right)e^{(2\,bx)}}{3\left(e^{(4\,bx+4\,a)}+1\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)^2*arccot(coth(b*x+a)),x, algorithm="maxima")
```

```
[Out] 1/3*(f^2*x^3 + 3*e*f*x^2 + 3*e^2*x)*arctan((e^(2*b*x + 2*a) - 1)/(e^(2*b*x
+ 2*a) + 1)) - integrate(2/3*(b*f^2*x^3*e^(2*a) + 3*b*e*f*x^2*e^(2*a) + 3*b
*e^2*x*e^(2*a))*e^(2*b*x)/(e^(4*b*x + 4*a) + 1), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \text{acot}(\coth(a + b\,x))\,\left(e + f\,x\right)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(acot(coth(a + b*x))*(e + f*x)^2,x)
```

```
[Out] int(acot(coth(a + b*x))*(e + f*x)^2, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(e + fx\right)^2 \text{acot}(\coth(a + bx))\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)**2*acot(coth(b*x+a)),x)
```

```
[Out] Integral((e + f*x)**2*acot(coth(a + b*x)), x)
```

3.202 $\int (e+fx)\cot^{-1}(\coth(a+bx))\,dx$

Optimal. Leaf size=159

$$-\frac{if\text{Li}_3\left(-ie^{2a+2bx}\right)}{8b^2}+\frac{if\text{Li}_3\left(ie^{2a+2bx}\right)}{8b^2}+\frac{i(e+fx)\text{Li}_2\left(-ie^{2a+2bx}\right)}{4b}-\frac{i(e+fx)\text{Li}_2\left(ie^{2a+2bx}\right)}{4b}-\frac{(e+fx)^2\tan^{-1}\left(e^{2a+2bx}\right)}{2f}$$

```
[Out] 1/2*(f*x+e)^2*arccot(coth(b*x+a))/f-1/2*(f*x+e)^2*arctan(exp(2*b*x+2*a))/f+
1/4*I*(f*x+e)*polylog(2,-I*exp(2*b*x+2*a))/b-1/4*I*(f*x+e)*polylog(2,I*exp(
2*b*x+2*a))/b-1/8*I*f*polylog(3,-I*exp(2*b*x+2*a))/b^2+1/8*I*f*polylog(3,I*
exp(2*b*x+2*a))/b^2
```

Rubi [A] time = 0.10, antiderivative size = 159, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.385, Rules used = {5186, 4180, 2531, 2282, 6589}

$$-\frac{if\text{PolyLog}\left(3,-ie^{2a+2bx}\right)}{8b^2}+\frac{if\text{PolyLog}\left(3,ie^{2a+2bx}\right)}{8b^2}+\frac{i(e+fx)\text{PolyLog}\left(2,-ie^{2a+2bx}\right)}{4b}-\frac{i(e+fx)\text{PolyLog}\left(2,i\right.}{4b}$$

Antiderivative was successfully verified.

```
[In] Int[(e + f*x)*ArcCot[Coth[a + b*x]],x]
```

```
[Out] ((e + f*x)^2*ArcCot[Coth[a + b*x]])/(2*f) - ((e + f*x)^2*ArcTan[E^(2*a + 2*
b*x)])/(2*f) + ((I/4)*(e + f*x)*PolyLog[2, (-I)*E^(2*a + 2*b*x)])/b - ((I/4
)*(e + f*x)*PolyLog[2, I*E^(2*a + 2*b*x)])/b - ((I/8)*f*PolyLog[3, (-I)*E^(
2*a + 2*b*x)])/b^2 + ((I/8)*f*PolyLog[3, I*E^(2*a + 2*b*x)])/b^2
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 4180

```
Int[csc[(e_.) + Pi*(k_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_
))^(m_.), x_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)/E^(
I*k*Pi)])/(f*fz*I), x] + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1
 - E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x] + Dist[(d*m)/(f*fz*I), Int[(c +
d*x)^(m - 1)*Log[1 + E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x]) /; FreeQ[{c,
d, e, f, fz}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 5186

```
Int[ArcCot[Coth[(a_.) + (b_.)*(x_)]]*((e_.) + (f_.)*(x_))^(m_.), x_Symbol]
:> Simp[((e + f*x)^(m + 1)*ArcCot[Coth[a + b*x]])/(f*(m + 1)), x] - Dist[b/
(f*(m + 1)), Int[(e + f*x)^(m + 1)*Sech[2*a + 2*b*x], x], x] /; FreeQ[{a, b
, e, f}, x] && IGtQ[m, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int (e+fx)\cot^{-1}(\coth(a+bx))\,dx = \frac{(e+fx)^2\cot^{-1}(\coth(a+bx))}{2f} - \frac{b\int (e+fx)^2\text{sech}(2a+2bx)\,dx}{2f}$$
$$= \frac{(e+fx)^2\cot^{-1}(\coth(a+bx))}{2f} - \frac{(e+fx)^2\tan^{-1}\left(e^{2a+2bx}\right)}{2f} + \frac{1}{2}i\int (e+fx)\log$$
$$= \frac{(e+fx)^2\cot^{-1}(\coth(a+bx))}{2f} - \frac{(e+fx)^2\tan^{-1}\left(e^{2a+2bx}\right)}{2f} + \frac{i(e+fx)\text{Li}_2\left(-i\right.}{4b}$$
$$= \frac{(e+fx)^2\cot^{-1}(\coth(a+bx))}{2f} - \frac{(e+fx)^2\tan^{-1}\left(e^{2a+2bx}\right)}{2f} + \frac{i(e+fx)\text{Li}_2\left(-i\right.}{4b}$$
$$= \frac{(e+fx)^2\cot^{-1}(\coth(a+bx))}{2f} - \frac{(e+fx)^2\tan^{-1}\left(e^{2a+2bx}\right)}{2f} + \frac{i(e+fx)\text{Li}_2\left(-i\right.}{4b}$$

Mathematica [A] time = 0.28, size = 278, normalized size = 1.75

$$-\frac{if\left(2b^2x^2\log\left(1-ie^{2(a+bx)}\right)-2b^2x^2\log\left(1+ie^{2(a+bx)}\right)-2bx\text{Li}_2\left(-ie^{2(a+bx)}\right)+2bx\text{Li}_2\left(ie^{2(a+bx)}\right)+\text{Li}_3\left(-ie^{2(a+bx)}\right)\right.}{8b^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(e + f*x)*ArcCot[Coth[a + b*x]],x]
```

```
[Out] e*x*ArcCot[Coth[a + b*x]] + (f*x^2*ArcCot[Coth[a + b*x]])/2 - (e*(-(((-4*I)
*a + Pi - (4*I)*b*x)*(Log[1 - I*E^(2*(a + b*x))] - Log[1 + I*E^(2*(a + b*x)
)])) + ((-4*I)*a + Pi)*Log[Cot[((4*I)*a + Pi + (4*I)*b*x)/4]] - (2*I)*(Poly
Log[2, (-I)*E^(2*(a + b*x))] - PolyLog[2, I*E^(2*(a + b*x))])))/(8*b) - ((I
/8)*f*(2*b^2*x^2*Log[1 - I*E^(2*(a + b*x))] - 2*b^2*x^2*Log[1 + I*E^(2*(a +
 b*x))] - 2*b*x*PolyLog[2, (-I)*E^(2*(a + b*x))] + 2*b*x*PolyLog[2, I*E^(2*
(a + b*x))] + PolyLog[3, (-I)*E^(2*(a + b*x))] - PolyLog[3, I*E^(2*(a + b*x
))]))/b^2
```

fricas [C] time = 0.82, size = 596, normalized size = 3.75

$$\frac{2\left(b^2fx^2+2\,b^2ex\right)\arctan\left(\frac{\sinh(bx+a)}{\cosh(bx+a)}\right)+\left(-2i\,bfx-2i\,be\right)\text{Li}_2\left(\frac{1}{2}\sqrt{4i}\left(\cosh\left(bx+a\right)+\sinh\left(bx+a\right)\right)\right)+\left(-2i\,bfx-\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*arccot(coth(b*x+a)),x, algorithm="fricas")
```

```
[Out] 1/4*(2*(b^2*f*x^2 + 2*b^2*e*x)*arctan(sinh(b*x + a)/cosh(b*x + a)) + (-2*I*
b*f*x - 2*I*b*e)*dilog(1/2*sqrt(4*I)*(cosh(b*x + a) + sinh(b*x + a))) + (-2
*I*b*f*x - 2*I*b*e)*dilog(-1/2*sqrt(4*I)*(cosh(b*x + a) + sinh(b*x + a))) +
 (2*I*b*f*x + 2*I*b*e)*dilog(1/2*sqrt(-4*I)*(cosh(b*x + a) + sinh(b*x + a))
) + (2*I*b*f*x + 2*I*b*e)*dilog(-1/2*sqrt(-4*I)*(cosh(b*x + a) + sinh(b*x +
 a))) + (-I*b^2*f*x^2 - 2*I*b^2*e*x - 2*I*a*b*e + I*a^2*f)*log(1/2*sqrt(4*I
)*(cosh(b*x + a) + sinh(b*x + a)) + 1) + (-I*b^2*f*x^2 - 2*I*b^2*e*x - 2*I*
a*b*e + I*a^2*f)*log(-1/2*sqrt(4*I)*(cosh(b*x + a) + sinh(b*x + a)) + 1) +
```

```
(I*b^2*f*x^2 + 2*I*b^2*e*x + 2*I*a*b*e - I*a^2*f)*log(1/2*sqrt(-4*I)*(cosh(
b*x + a) + sinh(b*x + a)) + 1) + (I*b^2*f*x^2 + 2*I*b^2*e*x + 2*I*a*b*e - I
*a^2*f)*log(-1/2*sqrt(-4*I)*(cosh(b*x + a) + sinh(b*x + a)) + 1) + (2*I*a*b
*e - I*a^2*f)*log(I*sqrt(4*I) + 2*cosh(b*x + a) + 2*sinh(b*x + a)) + (2*I*a
*b*e - I*a^2*f)*log(-I*sqrt(4*I) + 2*cosh(b*x + a) + 2*sinh(b*x + a)) + (-2
*I*a*b*e + I*a^2*f)*log(I*sqrt(-4*I) + 2*cosh(b*x + a) + 2*sinh(b*x + a)) +
 (-2*I*a*b*e + I*a^2*f)*log(-I*sqrt(-4*I) + 2*cosh(b*x + a) + 2*sinh(b*x +
a)) + 2*I*f*polylog(3, 1/2*sqrt(4*I)*(cosh(b*x + a) + sinh(b*x + a))) + 2*I
*f*polylog(3, -1/2*sqrt(4*I)*(cosh(b*x + a) + sinh(b*x + a))) - 2*I*f*polyl
og(3, 1/2*sqrt(-4*I)*(cosh(b*x + a) + sinh(b*x + a))) - 2*I*f*polylog(3, -1
/2*sqrt(-4*I)*(cosh(b*x + a) + sinh(b*x + a))))/b^2
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*arccot(coth(b*x+a)),x, algorithm="giac")
```

```
[Out] Timed out
```

maple [C] time = 5.09, size = 2688, normalized size = 16.91

Expression too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f*x+e)*arccot(coth(b*x+a)),x)
```

```
[Out] 1/4*Pi*x*e*csgn(I*(exp(2*b*x+2*a)+I)/(exp(2*b*x+2*a)-1))*csgn((1-I)*(exp(2*
b*x+2*a)+I)/(exp(2*b*x+2*a)-1))-1/4*Pi*x*e*csgn(I*(exp(2*b*x+2*a)-I)/(exp(2
*b*x+2*a)-1))*csgn((1+I)*(exp(2*b*x+2*a)-I)/(exp(2*b*x+2*a)-1))-1/4*I*f*ln(
1-I*exp(2*b*x+2*a))*x^2-1/2*I*ln(((-I)^(1/2)-exp(b*x+a))/(-I)^(1/2))*x*e-1/
2*I*ln(((-I)^(1/2)+exp(b*x+a))/(-I)^(1/2))*x*e-1/4*I/b^2*f*a^2*ln(exp(2*b*x
+2*a)+I)-1/2*I*e/b*a*ln(-exp(2*b*x+2*a)+I)+1/4*I*f/b^2*a^2*ln(-exp(2*b*x+2*
a)+I)+1/4*I*f*ln(1+I*exp(2*b*x+2*a))*x^2+1/2*I*e*ln(1+exp(b*x+a)*(-1)^(3/4)
)*x+1/2*I*e*ln(1-exp(b*x+a)*(-1)^(3/4))*x-1/4*Pi*x*e*csgn(I*(exp(2*b*x+2*a)
-I))*csgn(I/(exp(2*b*x+2*a)-1))*csgn(I*(exp(2*b*x+2*a)-I)/(exp(2*b*x+2*a)-1
))+1/4*Pi*x*e*csgn(I*(exp(2*b*x+2*a)+I))*csgn(I/(exp(2*b*x+2*a)-1))*csgn(I*
(exp(2*b*x+2*a)+I)/(exp(2*b*x+2*a)-1))-1/8*Pi*x^2*f*csgn(I/(exp(2*b*x+2*a)-
1))*csgn(I*(exp(2*b*x+2*a)+I)/(exp(2*b*x+2*a)-1))^2-1/8*Pi*x^2*f*csgn(I*(ex
p(2*b*x+2*a)+I)/(exp(2*b*x+2*a)-1))*csgn((1-I)*(exp(2*b*x+2*a)+I)/(exp(2*b*
x+2*a)-1))^2-1/8*I*f*polylog(3,-I*exp(2*b*x+2*a))/b^2+1/8*Pi*f*x^2+1/4*Pi*e
*x+1/8*Pi*x^2*f*csgn(I*(exp(2*b*x+2*a)-I)/(exp(2*b*x+2*a)-1))*csgn((1+I)*(e
xp(2*b*x+2*a)-I)/(exp(2*b*x+2*a)-1))^2+1/2*I*(1/2*f*x^2+e*x)*ln(exp(2*b*x+2
*a)+I)+1/2*I/b*a*e*ln(exp(2*b*x+2*a)+I)-1/4*I*ln(exp(2*b*x+2*a)-I)*f*x^2-1/
2*I*ln(exp(2*b*x+2*a)-I)*e*x+1/4*Pi*x*e*csgn(I*(exp(2*b*x+2*a)-I)/(exp(2*b*
x+2*a)-1))*csgn((1+I)*(exp(2*b*x+2*a)-I)/(exp(2*b*x+2*a)-1))^2+1/4*Pi*x*e*c
sgn(I/(exp(2*b*x+2*a)-1))*csgn(I*(exp(2*b*x+2*a)-I)/(exp(2*b*x+2*a)-1))^2-1
/4*Pi*x*e*csgn(I/(exp(2*b*x+2*a)-1))*csgn(I*(exp(2*b*x+2*a)+I)/(exp(2*b*x+2
*a)-1))^2-1/4*Pi*x*e*csgn(I*(exp(2*b*x+2*a)+I)/(exp(2*b*x+2*a)-1))*csgn((1-
I)*(exp(2*b*x+2*a)+I)/(exp(2*b*x+2*a)-1))^2+1/8*Pi*x^2*f*csgn(I*(exp(2*b*x+
2*a)-I))*csgn(I*(exp(2*b*x+2*a)-I)/(exp(2*b*x+2*a)-1))^2-1/8*Pi*x^2*f*csgn(
I*(exp(2*b*x+2*a)+I))*csgn(I*(exp(2*b*x+2*a)+I)/(exp(2*b*x+2*a)-1))^2+1/8*P
i*x^2*f*csgn(I*(exp(2*b*x+2*a)+I)/(exp(2*b*x+2*a)-1))*csgn((1-I)*(exp(2*b*x
+2*a)+I)/(exp(2*b*x+2*a)-1))+1/4*Pi*x*e*csgn(I*(exp(2*b*x+2*a)-I))*csgn(I*(
exp(2*b*x+2*a)-I)/(exp(2*b*x+2*a)-1))^2-1/4*Pi*x*e*csgn(I*(exp(2*b*x+2*a)+I
))*csgn(I*(exp(2*b*x+2*a)+I)/(exp(2*b*x+2*a)-1))^2+1/4*I*f/b*polylog(2,-I*e
xp(2*b*x+2*a))*x+1/4*I*f/b^2*polylog(2,-I*exp(2*b*x+2*a))*a+1/2*I*e/b*ln(1+
exp(b*x+a)*(-1)^(3/4))*a+1/2*I*e/b*ln(1-exp(b*x+a)*(-1)^(3/4))*a-1/2*I*f/b^
```

```
2*a^2*ln(1+exp(b*x+a)*(-1)^(3/4))+1/2*I*f/b*ln(1+I*exp(2*b*x+2*a))*x*a-1/2*
I*f/b*a*ln(1+exp(b*x+a)*(-1)^(3/4))*x-1/2*I*f/b*a*ln(1-exp(b*x+a)*(-1)^(3/4
))*x-1/2*I/b*f*ln(1-I*exp(2*b*x+2*a))*x*a+1/2*I/b*f*a*ln(((-I)^(1/2)-exp(b*
x+a))/(-I)^(1/2))*x+1/2*I/b*f*a*ln(((-I)^(1/2)+exp(b*x+a))/(-I)^(1/2))*x-1/
8*Pi*x^2*f*csgn(I*(exp(2*b*x+2*a)-I))*csgn(I/(exp(2*b*x+2*a)-1))*csgn(I*(ex
p(2*b*x+2*a)-I)/(exp(2*b*x+2*a)-1))+1/8*Pi*x^2*f*csgn(I*(exp(2*b*x+2*a)+I))
*csgn(I/(exp(2*b*x+2*a)-1))*csgn(I*(exp(2*b*x+2*a)+I)/(exp(2*b*x+2*a)-1))+1
/4*Pi*x*e*csgn((1-I)*(exp(2*b*x+2*a)+I)/(exp(2*b*x+2*a)-1))^2+1/8*Pi*x^2*f*
csgn((1-I)*(exp(2*b*x+2*a)+I)/(exp(2*b*x+2*a)-1))^2-1/4*Pi*x*e*csgn((1+I)*(
exp(2*b*x+2*a)-I)/(exp(2*b*x+2*a)-1))^3+1/8*Pi*x^2*f*csgn((1+I)*(exp(2*b*x+
2*a)-I)/(exp(2*b*x+2*a)-1))^2+1/4*Pi*x*e*csgn((1+I)*(exp(2*b*x+2*a)-I)/(exp
(2*b*x+2*a)-1))^2-1/2*I/b*ln(((-I)^(1/2)-exp(b*x+a))/(-I)^(1/2))*a*e-1/2*I/
b*ln(((-I)^(1/2)+exp(b*x+a))/(-I)^(1/2))*a*e-1/4*I/b*f*polylog(2,I*exp(2*b*
x+2*a))*x-1/4*I/b^2*f*ln(1-I*exp(2*b*x+2*a))*a^2+1/2*I/b^2*f*a^2*ln(((-I)^(
1/2)-exp(b*x+a))/(-I)^(1/2))+1/2*I/b^2*f*a^2*ln(((-I)^(1/2)+exp(b*x+a))/(-I
)^(1/2))-1/2*I*f/b^2*a^2*ln(1-exp(b*x+a)*(-1)^(3/4))-1/4*I/b^2*f*polylog(2,
I*exp(2*b*x+2*a))*a+1/4*I*f/b^2*ln(1+I*exp(2*b*x+2*a))*a^2-1/8*Pi*x^2*f*csg
n(I*(exp(2*b*x+2*a)-I)/(exp(2*b*x+2*a)-1))^3+1/8*Pi*x^2*f*csgn(I*(exp(2*b*x
+2*a)+I)/(exp(2*b*x+2*a)-1))^3-1/8*Pi*x^2*f*csgn((1-I)*(exp(2*b*x+2*a)+I)/(
exp(2*b*x+2*a)-1))^3-1/8*Pi*x^2*f*csgn((1+I)*(exp(2*b*x+2*a)-I)/(exp(2*b*x+
2*a)-1))^3-1/4*Pi*x*e*csgn(I*(exp(2*b*x+2*a)-I)/(exp(2*b*x+2*a)-1))^3+1/2*I
*e/b*dilog(1+exp(b*x+a)*(-1)^(3/4))+1/2*I*e/b*dilog(1-exp(b*x+a)*(-1)^(3/4)
)-1/2*I/b*e*dilog(((-I)^(1/2)-exp(b*x+a))/(-I)^(1/2))-1/2*I/b*e*dilog(((-I)
^(1/2)+exp(b*x+a))/(-I)^(1/2))+1/2*I/b^2*f*a*dilog(((-I)^(1/2)-exp(b*x+a))/
(-I)^(1/2))+1/2*I/b^2*f*a*dilog(((-I)^(1/2)+exp(b*x+a))/(-I)^(1/2))-1/2*I*f
/b^2*a*dilog(1+exp(b*x+a)*(-1)^(3/4))-1/2*I*f/b^2*a*dilog(1-exp(b*x+a)*(-1)
^(3/4))-1/8*Pi*x^2*f*csgn(I*(exp(2*b*x+2*a)-I)/(exp(2*b*x+2*a)-1))*csgn((1+
I)*(exp(2*b*x+2*a)-I)/(exp(2*b*x+2*a)-1))+1/8*Pi*x^2*f*csgn(I/(exp(2*b*x+2*
a)-1))*csgn(I*(exp(2*b*x+2*a)-I)/(exp(2*b*x+2*a)-1))^2+1/8*I*f*polylog(3,I*
exp(2*b*x+2*a))/b^2+1/4*Pi*x*e*csgn(I*(exp(2*b*x+2*a)+I)/(exp(2*b*x+2*a)-1)
)^3-1/4*Pi*x*e*csgn((1-I)*(exp(2*b*x+2*a)+I)/(exp(2*b*x+2*a)-1))^3
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{2}\left(fx^2+2\,ex\right)\arctan\left(\frac{e^{(2\,bx+2\,a)}-1}{e^{(2\,bx+2\,a)}+1}\right)-\int\frac{\left(bfx^2e^{(2\,a)}+2\,bexe^{(2\,a)}\right)e^{(2\,bx)}}{e^{(4\,bx+4\,a)}+1}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*arccot(coth(b*x+a)),x, algorithm="maxima")
```

```
[Out] 1/2*(f*x^2 + 2*e*x)*arctan((e^(2*b*x + 2*a) - 1)/(e^(2*b*x + 2*a) + 1)) - i
ntegrate((b*f*x^2*e^(2*a) + 2*b*e*x*e^(2*a))*e^(2*b*x)/(e^(4*b*x + 4*a) + 1
), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \operatorname{acot}\left(\coth\left(a+b\,x\right)\right)\,\left(e+f\,x\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(acot(coth(a + b*x))*(e + f*x),x)
```

```
[Out] int(acot(coth(a + b*x))*(e + f*x), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(e+fx\right)\operatorname{acot}\left(\coth\left(a+bx\right)\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((f*x+e)*acot(coth(b*x+a)),x)
[Out] Integral((e + f*x)*acot(coth(a + b*x)), x)
```

3.203 $\int \cot^{-1}(\coth(a+bx))\,dx$

Optimal. Leaf size=74

$$\frac{i\text{Li}_2\left(-ie^{2a+2bx}\right)}{4b}-\frac{i\text{Li}_2\left(ie^{2a+2bx}\right)}{4b}-x\tan^{-1}\left(e^{2a+2bx}\right)+x\cot^{-1}(\coth(a+bx))$$

```
[Out] x*arccot(coth(b*x+a))-x*arctan(exp(2*b*x+2*a))+1/4*I*polylog(2,-I*exp(2*b*x
+2*a))/b-1/4*I*polylog(2,I*exp(2*b*x+2*a))/b
```

Rubi [A] time = 0.04, antiderivative size = 74, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 7, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.571, Rules used = {5182, 4180, 2279, 2391}

$$\frac{i\text{PolyLog}\left(2,-ie^{2a+2bx}\right)}{4b}-\frac{i\text{PolyLog}\left(2,ie^{2a+2bx}\right)}{4b}-x\tan^{-1}\left(e^{2a+2bx}\right)+x\cot^{-1}(\coth(a+bx))$$

Antiderivative was successfully verified.

```
[In] Int[ArcCot[Coth[a + b*x]],x]
```

```
[Out] x*ArcCot[Coth[a + b*x]] - x*ArcTan[E^(2*a + 2*b*x)] + ((I/4)*PolyLog[2, (-I
)*E^(2*a + 2*b*x)])/b - ((I/4)*PolyLog[2, I*E^(2*a + 2*b*x)])/b
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 4180

```
Int[csc[(e_.) + Pi*(k_.) + (Complex[0, fz_])*(f_.)*(x_)]*((c_.) + (d_.)*(x_
))^(m_.), x_Symbol] :> Simp[(-2*(c + d*x)^m*ArcTanh[E^(-(I*e) + f*fz*x)/E^(
I*k*Pi)])/(f*fz*I), x] + (-Dist[(d*m)/(f*fz*I), Int[(c + d*x)^(m - 1)*Log[1
 - E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x] + Dist[(d*m)/(f*fz*I), Int[(c +
d*x)^(m - 1)*Log[1 + E^(-(I*e) + f*fz*x)/E^(I*k*Pi)], x], x]) /; FreeQ[{c,
d, e, f, fz}, x] && IntegerQ[2*k] && IGtQ[m, 0]
```

Rule 5182

```
Int[ArcCot[Coth[(a_.) + (b_.)*(x_)]], x_Symbol] :> Simp[x*ArcCot[Coth[a + b
*x]], x] - Dist[b, Int[x*Sech[2*a + 2*b*x], x], x] /; FreeQ[{a, b}, x]
```

Rubi steps

$$\begin{aligned}
\int \cot^{-1}(\coth(a+bx))\,dx &= x\cot^{-1}(\coth(a+bx))-b\int x\text{sech}(2a+2bx)\,dx\\
&= x\cot^{-1}(\coth(a+bx))-x\tan^{-1}\left(e^{2a+2bx}\right)+\frac{1}{2}i\int \log\left(1-ie^{2a+2bx}\right)\,dx-\frac{1}{2}i\int \log\left(1\right.\\
&= x\cot^{-1}(\coth(a+bx))-x\tan^{-1}\left(e^{2a+2bx}\right)+\frac{i\,\text{Subst}\left(\int \frac{\log(1-ix)}{x}\,dx,x,e^{2a+2bx}\right)}{4b}-\frac{i\,\text{Sub}}{}\\
&= x\cot^{-1}(\coth(a+bx))-x\tan^{-1}\left(e^{2a+2bx}\right)+\frac{i\text{Li}_2\left(-ie^{2a+2bx}\right)}{4b}-\frac{i\text{Li}_2\left(ie^{2a+2bx}\right)}{4b}
\end{aligned}$$

Mathematica [A] time = 0.05, size = 132, normalized size = 1.78

$$x\cot^{-1}(\coth(a+bx))-\frac{-2i\left(\mathrm{Li}_2\left(-ie^{2(a+bx)}\right)-\mathrm{Li}_2\left(ie^{2(a+bx)}\right)\right)-\left((-4ia-4ibx+\pi)\left(\log\left(1-ie^{2(a+bx)}\right)-\log\left(1+\right.\right.\right.}{8b}$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcCot[Coth[a + b*x]],x]
```

```
[Out] x*ArcCot[Coth[a + b*x]] - (-(((-4*I)*a + Pi - (4*I)*b*x)*(Log[1 - I*E^(2*(a
 + b*x))] - Log[1 + I*E^(2*(a + b*x))])) + ((-4*I)*a + Pi)*Log[Cot[((4*I)*a
 + Pi + (4*I)*b*x)/4]] - (2*I)*(PolyLog[2, (-I)*E^(2*(a + b*x))] - PolyLog[
2, I*E^(2*(a + b*x))]))/(8*b)
```

fricas [B] time = 0.83, size = 334, normalized size = 4.51

$$\frac{2\,bx\arctan\left(\frac{\sinh(bx+a)}{\cosh(bx+a)}\right)+(-i\,bx-i\,a)\log\left(\frac{1}{2}\sqrt{4i}\left(\cosh\left(bx+a\right)+\sinh\left(bx+a\right)\right)+1\right)+(-i\,bx-i\,a)\log\left(-\frac{1}{2}\sqrt{\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(coth(b*x+a)),x, algorithm="fricas")
```

```
[Out] 1/2*(2*b*x*arctan(sinh(b*x + a)/cosh(b*x + a)) + (-I*b*x - I*a)*log(1/2*sqr
t(4*I)*(cosh(b*x + a) + sinh(b*x + a)) + 1) + (-I*b*x - I*a)*log(-1/2*sqrt(
4*I)*(cosh(b*x + a) + sinh(b*x + a)) + 1) + (I*b*x + I*a)*log(1/2*sqrt(-4*I
)*(cosh(b*x + a) + sinh(b*x + a)) + 1) + (I*b*x + I*a)*log(-1/2*sqrt(-4*I)*
(cosh(b*x + a) + sinh(b*x + a)) + 1) + I*a*log(I*sqrt(4*I) + 2*cosh(b*x + a
) + 2*sinh(b*x + a)) + I*a*log(-I*sqrt(4*I) + 2*cosh(b*x + a) + 2*sinh(b*x
+ a)) - I*a*log(I*sqrt(-4*I) + 2*cosh(b*x + a) + 2*sinh(b*x + a)) - I*a*log
(-I*sqrt(-4*I) + 2*cosh(b*x + a) + 2*sinh(b*x + a)) - I*dilog(1/2*sqrt(4*I)
*(cosh(b*x + a) + sinh(b*x + a))) - I*dilog(-1/2*sqrt(4*I)*(cosh(b*x + a) +
 sinh(b*x + a))) + I*dilog(1/2*sqrt(-4*I)*(cosh(b*x + a) + sinh(b*x + a)))
+ I*dilog(-1/2*sqrt(-4*I)*(cosh(b*x + a) + sinh(b*x + a))))/b
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \operatorname{arccot}\left(\coth\left(bx+a\right)\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(coth(b*x+a)),x, algorithm="giac")
```

```
[Out] integrate(arccot(coth(b*x + a)), x)
```

maple [B] time = 0.59, size = 198, normalized size = 2.68

$$\frac{\operatorname{arctanh}\left(\coth\left(bx+a\right)\right)\operatorname{arccot}\left(\coth\left(bx+a\right)\right)}{b}+\frac{\arctan\left(\coth\left(bx+a\right)\right)\operatorname{arctanh}\left(\coth\left(bx+a\right)\right)}{b}+\frac{\arctan\left(\coth\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arccot(coth(b*x+a)),x)
```

```
[Out] 1/b*arctanh(coth(b*x+a))*arccot(coth(b*x+a))+1/b*arctan(coth(b*x+a))*arctan
h(coth(b*x+a))+1/2/b*arctan(coth(b*x+a))*ln(1+I*(1+I*coth(b*x+a))^2/(coth(b
*x+a)^2+1))-1/2/b*arctan(coth(b*x+a))*ln(1-I*(1+I*coth(b*x+a))^2/(coth(b*x+
a)^2+1))-1/4*I/b*dilog(1+I*(1+I*coth(b*x+a))^2/(coth(b*x+a)^2+1))+1/4*I/b*d
ilog(1-I*(1+I*coth(b*x+a))^2/(coth(b*x+a)^2+1))
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$x \arctan\left(\frac{e^{(2\,bx+2\,a)}-1}{e^{(2\,bx+2\,a)}+1}\right)-2\,b\int\frac{xe^{(2\,bx+2\,a)}}{e^{(4\,bx+4\,a)}+1}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(coth(b*x+a)),x, algorithm="maxima")
```

```
[Out] x*arctan((e^(2*b*x + 2*a) - 1)/(e^(2*b*x + 2*a) + 1)) - 2*b*integrate(x*e^(
2*b*x + 2*a)/(e^(4*b*x + 4*a) + 1), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \operatorname{acot}\left(\coth\left(a+b\,x\right)\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(acot(coth(a + b*x)),x)
```

```
[Out] int(acot(coth(a + b*x)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \operatorname{acot}\left(\coth\left(a+bx\right)\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(acot(coth(b*x+a)),x)
```

```
[Out] Integral(acot(coth(a + b*x)), x)
```

3.204 $\int \frac{\cot^{-1}(\coth(a+bx))}{e+fx}\,dx$

Optimal. Leaf size=18

$$\text{Int}\left(\frac{\cot^{-1}(\coth(a+bx))}{e+fx},x\right)$$

```
[Out] CannotIntegrate(arccot(coth(b*x+a))/(f*x+e),x)
```

Rubi [A] time = 0.04, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\cot^{-1}(\coth(a+bx))}{e+fx}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[ArcCot[Coth[a + b*x]]/(e + f*x),x]
[Out] Defer[Int][ArcCot[Coth[a + b*x]]/(e + f*x), x]
```

Rubi steps

$$\int \frac{\cot^{-1}(\coth(a+bx))}{e+fx}\,dx = \int \frac{\cot^{-1}(\coth(a+bx))}{e+fx}\,dx$$

Mathematica [A] time = 0.84, size = 0, normalized size = 0.00

$$\int \frac{\cot^{-1}(\coth(a+bx))}{e+fx}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[ArcCot[Coth[a + b*x]]/(e + f*x),x]
[Out] Integrate[ArcCot[Coth[a + b*x]]/(e + f*x), x]
```

fricas [A] time = 0.63, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\operatorname{arccot}\left(\coth\left(bx+a\right)\right)}{fx+e},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(coth(b*x+a))/(f*x+e),x, algorithm="fricas")
[Out] integral(arccot(coth(b*x + a))/(f*x + e), x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$sage_0x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(coth(b*x+a))/(f*x+e),x, algorithm="giac")
[Out] sage0*x
```

maple [A] time = 2.66, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{arccot}\left(\coth\left(bx+a\right)\right)}{fx+e}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arccot(coth(b*x+a))/(f*x+e),x)
```

```
[Out] int(arccot(coth(b*x+a))/(f*x+e),x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{arccot}(\coth(bx+a))}{fx+e}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(coth(b*x+a))/(f*x+e),x, algorithm="maxima")
```

```
[Out] integrate(arccot(coth(b*x + a))/(f*x + e), x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.06

$$\int \frac{\operatorname{acot}(\coth(a+b\,x))}{e+f\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(acot(coth(a + b*x))/(e + f*x),x)
```

```
[Out] int(acot(coth(a + b*x))/(e + f*x), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(acot(coth(b*x+a))/(f*x+e),x)
```

```
[Out] Timed out
```

3.205 $\int x^2 \cot^{-1}(c + d\coth(a + bx))\,dx$

Optimal. Leaf size=351

$$-\frac{i\text{Li}_4\left(\frac{(-c-d+i)e^{2a+2bx}}{-c+d+i}\right)}{8b^3}+\frac{i\text{Li}_4\left(\frac{(c+d+i)e^{2a+2bx}}{c-d+i}\right)}{8b^3}+\frac{ix\text{Li}_3\left(\frac{(-c-d+i)e^{2a+2bx}}{-c+d+i}\right)}{4b^2}-\frac{ix\text{Li}_3\left(\frac{(c+d+i)e^{2a+2bx}}{c-d+i}\right)}{4b^2}-\frac{ix^2\text{Li}_2\left(\frac{(-c-d+i)e^{2a+2bx}}{-c+d+i}\right)}{4b}-$$

```
[Out] 1/3*x^3*arccot(c+d*coth(b*x+a))-1/6*I*x^3*ln(1-(I-c-d)*exp(2*b*x+2*a)/(I-c+
d))+1/6*I*x^3*ln(1-(I+c+d)*exp(2*b*x+2*a)/(I+c-d))-1/4*I*x^2*polylog(2,(I-c
-d)*exp(2*b*x+2*a)/(I-c+d))/b+1/4*I*x^2*polylog(2,(I+c+d)*exp(2*b*x+2*a)/(I
+c-d))/b+1/4*I*x*polylog(3,(I-c-d)*exp(2*b*x+2*a)/(I-c+d))/b^2-1/4*I*x*poly
log(3,(I+c+d)*exp(2*b*x+2*a)/(I+c-d))/b^2-1/8*I*polylog(4,(I-c-d)*exp(2*b*x
+2*a)/(I-c+d))/b^3+1/8*I*polylog(4,(I+c+d)*exp(2*b*x+2*a)/(I+c-d))/b^3
```

Rubi [A] time = 0.46, antiderivative size = 351, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 6, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.400, Rules used = {5202, 2190, 2531, 6609, 2282, 6589}

$$\frac{ix\text{PolyLog}\left(3,\frac{(-c-d+i)e^{2a+2bx}}{-c+d+i}\right)}{4b^2}-\frac{ix\text{PolyLog}\left(3,\frac{(c+d+i)e^{2a+2bx}}{c-d+i}\right)}{4b^2}-\frac{i\text{PolyLog}\left(4,\frac{(-c-d+i)e^{2a+2bx}}{-c+d+i}\right)}{8b^3}+\frac{i\text{PolyLog}\left(4,\frac{(c+d+i)e^{2a+2bx}}{c-d+i}\right)}{8b^3}$$

Antiderivative was successfully verified.

```
[In] Int[x^2*ArcCot[c + d*Coth[a + b*x]],x]
```

```
[Out] (x^3*ArcCot[c + d*Coth[a + b*x]])/3 - (I/6)*x^3*Log[1 - ((I - c - d)*E^(2*a
 + 2*b*x))/(I - c + d)] + (I/6)*x^3*Log[1 - ((I + c + d)*E^(2*a + 2*b*x))/(
I + c - d)] - ((I/4)*x^2*PolyLog[2, ((I - c - d)*E^(2*a + 2*b*x))/(I - c +
d)])/b + ((I/4)*x^2*PolyLog[2, ((I + c + d)*E^(2*a + 2*b*x))/(I + c - d)])/
b + ((I/4)*x*PolyLog[3, ((I - c - d)*E^(2*a + 2*b*x))/(I - c + d)])/b^2 - (
(I/4)*x*PolyLog[3, ((I + c + d)*E^(2*a + 2*b*x))/(I + c - d)])/b^2 - ((I/8)
*PolyLog[4, ((I - c - d)*E^(2*a + 2*b*x))/(I - c + d)])/b^3 + ((I/8)*PolyLo
g[4, ((I + c + d)*E^(2*a + 2*b*x))/(I + c - d)])/b^3
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 5202

```
Int[ArcCot[(c_.) + Coth[(a_.) + (b_.)*(x_)]*(d_.)]*((e_.) + (f_.)*(x_))^(m_
.), x_Symbol] :> Simp[((e + f*x)^(m + 1)*ArcCot[c + d*Coth[a + b*x]])/(f*(m
 + 1)), x] + (Dist[(I*b*(I - c - d))/(f*(m + 1)), Int[((e + f*x)^(m + 1)*E^
(2*a + 2*b*x))/(I - c + d - (I - c - d)*E^(2*a + 2*b*x)), x], x] - Dist[(I*
b*(I + c + d))/(f*(m + 1)), Int[((e + f*x)^(m + 1)*E^(2*a + 2*b*x))/(I + c
- d - (I + c + d)*E^(2*a + 2*b*x)), x], x]) /; FreeQ[{a, b, c, d, e, f}, x]
 && IGtQ[m, 0] && NeQ[(c - d)^2, -1]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6609

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[((e + f*x)^m*PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p])/(b*c*p*Log[F]), x] - Dist[(f*m)/(b*c*p*Log[F]), Int[(e + f*x)^
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
 d, e, f, n, p}, x] && GtQ[m, 0]
```

Rubi steps

$$\int x^2 \cot^{-1}(c+d\coth(a+bx))\,dx = \frac{1}{3}x^3\cot^{-1}(c+d\coth(a+bx)) + \frac{1}{3}(b(1-i(c+d)))\int \frac{e^{2a+2bx}x^3}{i+c-d+(-i-c-d)e}$$

$$= \frac{1}{3}x^3\cot^{-1}(c+d\coth(a+bx)) - \frac{1}{6}ix^3\log\left(1-\frac{(i-c-d)e^{2a+2bx}}{i-c+d}\right) + \frac{1}{6}ix^3\log$$

$$= \frac{1}{3}x^3\cot^{-1}(c+d\coth(a+bx)) - \frac{1}{6}ix^3\log\left(1-\frac{(i-c-d)e^{2a+2bx}}{i-c+d}\right) + \frac{1}{6}ix^3\log$$

$$= \frac{1}{3}x^3\cot^{-1}(c+d\coth(a+bx)) - \frac{1}{6}ix^3\log\left(1-\frac{(i-c-d)e^{2a+2bx}}{i-c+d}\right) + \frac{1}{6}ix^3\log$$

$$= \frac{1}{3}x^3\cot^{-1}(c+d\coth(a+bx)) - \frac{1}{6}ix^3\log\left(1-\frac{(i-c-d)e^{2a+2bx}}{i-c+d}\right) + \frac{1}{6}ix^3\log$$

$$= \frac{1}{3}x^3\cot^{-1}(c+d\coth(a+bx)) - \frac{1}{6}ix^3\log\left(1-\frac{(i-c-d)e^{2a+2bx}}{i-c+d}\right) + \frac{1}{6}ix^3\log$$

Mathematica [A] time = 5.77, size = 299, normalized size = 0.85

$$\frac{1}{3}x^3\cot^{-1}(d\coth(a+bx)+c) - \frac{i\left(4b^3x^3\log\left(1+\frac{(c+d-i)e^{2(a+bx)}}{-c+d+i}\right) - 4b^3x^3\log\left(1+\frac{(c+d+i)e^{2(a+bx)}}{-c+d-i}\right) + 6b^2x^2\text{Li}_2\left(\frac{(c+d-i)e^{2(a+}}{c-d-i}\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*ArcCot[c + d*Coth[a + b*x]],x]
```

```
[Out] (x^3*ArcCot[c + d*Coth[a + b*x]])/3 - ((I/24)*(4*b^3*x^3*Log[1 + ((-I + c +
 d)*E^(2*(a + b*x)))/(I - c + d)] - 4*b^3*x^3*Log[1 + ((I + c + d)*E^(2*(a
+ b*x)))/(-I - c + d)] + 6*b^2*x^2*PolyLog[2, ((-I + c + d)*E^(2*(a + b*x))
)/(-I + c - d)] - 6*b^2*x^2*PolyLog[2, ((I + c + d)*E^(2*(a + b*x)))/(I + c
```

```
 - d)] - 6*b*x*PolyLog[3, ((-I + c + d)*E^(2*(a + b*x)))/(-I + c - d)] + 6*
b*x*PolyLog[3, ((I + c + d)*E^(2*(a + b*x)))/(I + c - d)] + 3*PolyLog[4, ((
-I + c + d)*E^(2*(a + b*x)))/(-I + c - d)] - 3*PolyLog[4, ((I + c + d)*E^(2
*(a + b*x)))/(I + c - d)]))/b^3
```

fricas [C] time = 1.18, size = 1315, normalized size = 3.75

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*arccot(c+d*coth(b*x+a)),x, algorithm="fricas")
```

```
[Out] 1/6*(2*b^3*x^3*arctan(sinh(b*x + a)/(d*cosh(b*x + a) + c*sinh(b*x + a))) -
3*I*b^2*x^2*dilog(1/2*sqrt((4*c^2 - 4*d^2 + 8*I*d + 4)/(c^2 - 2*c*d + d^2 +
 1))*(cosh(b*x + a) + sinh(b*x + a))) - 3*I*b^2*x^2*dilog(-1/2*sqrt((4*c^2
- 4*d^2 + 8*I*d + 4)/(c^2 - 2*c*d + d^2 + 1))*(cosh(b*x + a) + sinh(b*x + a
))) + 3*I*b^2*x^2*dilog(1/2*sqrt((4*c^2 - 4*d^2 - 8*I*d + 4)/(c^2 - 2*c*d +
 d^2 + 1))*(cosh(b*x + a) + sinh(b*x + a))) + 3*I*b^2*x^2*dilog(-1/2*sqrt((
4*c^2 - 4*d^2 - 8*I*d + 4)/(c^2 - 2*c*d + d^2 + 1))*(cosh(b*x + a) + sinh(b
*x + a))) + I*a^3*log(2*(c^2 + 2*c*d + d^2 + 1)*cosh(b*x + a) + 2*(c^2 + 2*
c*d + d^2 + 1)*sinh(b*x + a) + (c^2 - d^2 - 2*I*d + 1)*sqrt((4*c^2 - 4*d^2
+ 8*I*d + 4)/(c^2 - 2*c*d + d^2 + 1))) + I*a^3*log(2*(c^2 + 2*c*d + d^2 + 1
)*cosh(b*x + a) + 2*(c^2 + 2*c*d + d^2 + 1)*sinh(b*x + a) - (c^2 - d^2 - 2*
I*d + 1)*sqrt((4*c^2 - 4*d^2 + 8*I*d + 4)/(c^2 - 2*c*d + d^2 + 1))) - I*a^3
*log(2*(c^2 + 2*c*d + d^2 + 1)*cosh(b*x + a) + 2*(c^2 + 2*c*d + d^2 + 1)*si
nh(b*x + a) + (c^2 - d^2 + 2*I*d + 1)*sqrt((4*c^2 - 4*d^2 - 8*I*d + 4)/(c^2
 - 2*c*d + d^2 + 1))) - I*a^3*log(2*(c^2 + 2*c*d + d^2 + 1)*cosh(b*x + a) +
 2*(c^2 + 2*c*d + d^2 + 1)*sinh(b*x + a) - (c^2 - d^2 + 2*I*d + 1)*sqrt((4*
c^2 - 4*d^2 - 8*I*d + 4)/(c^2 - 2*c*d + d^2 + 1))) + 6*I*b*x*polylog(3, 1/2
*sqrt((4*c^2 - 4*d^2 + 8*I*d + 4)/(c^2 - 2*c*d + d^2 + 1))*(cosh(b*x + a) +
 sinh(b*x + a))) + 6*I*b*x*polylog(3, -1/2*sqrt((4*c^2 - 4*d^2 + 8*I*d + 4)
/(c^2 - 2*c*d + d^2 + 1))*(cosh(b*x + a) + sinh(b*x + a))) - 6*I*b*x*polylo
g(3, 1/2*sqrt((4*c^2 - 4*d^2 - 8*I*d + 4)/(c^2 - 2*c*d + d^2 + 1))*(cosh(b*
x + a) + sinh(b*x + a))) - 6*I*b*x*polylog(3, -1/2*sqrt((4*c^2 - 4*d^2 - 8*
I*d + 4)/(c^2 - 2*c*d + d^2 + 1))*(cosh(b*x + a) + sinh(b*x + a))) + (-I*b^
3*x^3 - I*a^3)*log(1/2*sqrt((4*c^2 - 4*d^2 + 8*I*d + 4)/(c^2 - 2*c*d + d^2
+ 1))*(cosh(b*x + a) + sinh(b*x + a)) + 1) + (-I*b^3*x^3 - I*a^3)*log(-1/2*
sqrt((4*c^2 - 4*d^2 + 8*I*d + 4)/(c^2 - 2*c*d + d^2 + 1))*(cosh(b*x + a) +
sinh(b*x + a)) + 1) + (I*b^3*x^3 + I*a^3)*log(1/2*sqrt((4*c^2 - 4*d^2 - 8*I
*d + 4)/(c^2 - 2*c*d + d^2 + 1))*(cosh(b*x + a) + sinh(b*x + a)) + 1) + (I*
b^3*x^3 + I*a^3)*log(-1/2*sqrt((4*c^2 - 4*d^2 - 8*I*d + 4)/(c^2 - 2*c*d + d
^2 + 1))*(cosh(b*x + a) + sinh(b*x + a)) + 1) - 6*I*polylog(4, 1/2*sqrt((4*
c^2 - 4*d^2 + 8*I*d + 4)/(c^2 - 2*c*d + d^2 + 1))*(cosh(b*x + a) + sinh(b*x
 + a))) - 6*I*polylog(4, -1/2*sqrt((4*c^2 - 4*d^2 + 8*I*d + 4)/(c^2 - 2*c*d
 + d^2 + 1))*(cosh(b*x + a) + sinh(b*x + a))) + 6*I*polylog(4, 1/2*sqrt((4*
c^2 - 4*d^2 - 8*I*d + 4)/(c^2 - 2*c*d + d^2 + 1))*(cosh(b*x + a) + sinh(b*x
 + a))) + 6*I*polylog(4, -1/2*sqrt((4*c^2 - 4*d^2 - 8*I*d + 4)/(c^2 - 2*c*d
 + d^2 + 1))*(cosh(b*x + a) + sinh(b*x + a))))/b^3
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^2 \operatorname{arccot}(d \coth(bx + a) + c) \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*arccot(c+d*coth(b*x+a)),x, algorithm="giac")
```

```
[Out] integrate(x^2*arccot(d*coth(b*x + a) + c), x)
```

maple [C] time = 60.22, size = 6858, normalized size = 19.54

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*arccot(c+d*coth(b*x+a)),x)
```

```
[Out] result too large to display
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{3}\,x^3\arctan\left(e^{(2\,bx+2\,a)}-1,\left(ce^{(2\,a)}+de^{(2\,a)}\right)e^{(2\,bx)}-c+d\right)-4\,bd\int\frac{x^3e}{3\left(c^2-2\,cd+d^2+\left(c^2e^{(4\,a)}+2\,cde^{(4\,a)}+d^2e^{(4\,a)}\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*arccot(c+d*coth(b*x+a)),x, algorithm="maxima")
```

```
[Out] 1/3*x^3*arctan2(e^(2*b*x + 2*a) - 1, (c*e^(2*a) + d*e^(2*a))*e^(2*b*x) - c
+ d) - 4*b*d*integrate(1/3*x^3*e^(2*b*x + 2*a)/(c^2 - 2*c*d + d^2 + (c^2*e^
(4*a) + 2*c*d*e^(4*a) + d^2*e^(4*a) + e^(4*a))*e^(4*b*x) - 2*(c^2*e^(2*a) -
 d^2*e^(2*a) + e^(2*a))*e^(2*b*x) + 1), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int x^2\,\mathrm{acot}\left(c+d\,\mathrm{coth}\left(a+b\,x\right)\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*acot(c + d*coth(a + b*x)),x)
```

```
[Out] int(x^2*acot(c + d*coth(a + b*x)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*acot(c+d*coth(b*x+a)),x)
```

```
[Out] Timed out
```

3.206 $\int x\cot^{-1}(c+d\coth(a+bx))\,dx$

Optimal. Leaf size=265

$$\frac{i\text{Li}_3\left(\frac{(-c-d+i)e^{2a+2bx}}{-c+d+i}\right)}{8b^2}-\frac{i\text{Li}_3\left(\frac{(c+d+i)e^{2a+2bx}}{c-d+i}\right)}{8b^2}-\frac{ix\text{Li}_2\left(\frac{(-c-d+i)e^{2a+2bx}}{-c+d+i}\right)}{4b}+\frac{ix\text{Li}_2\left(\frac{(c+d+i)e^{2a+2bx}}{c-d+i}\right)}{4b}-\frac{1}{4}ix^2\log\left(1-\frac{(-c-d+}{-c+}\right.$$

```
[Out] 1/2*x^2*arccot(c+d*coth(b*x+a))-1/4*I*x^2*ln(1-(I-c-d)*exp(2*b*x+2*a)/(I-c+
d))+1/4*I*x^2*ln(1-(I+c+d)*exp(2*b*x+2*a)/(I+c-d))-1/4*I*x*polylog(2,(I-c-d
)*exp(2*b*x+2*a)/(I-c+d))/b+1/4*I*x*polylog(2,(I+c+d)*exp(2*b*x+2*a)/(I+c-d
))/b+1/8*I*polylog(3,(I-c-d)*exp(2*b*x+2*a)/(I-c+d))/b^2-1/8*I*polylog(3,(I
+c+d)*exp(2*b*x+2*a)/(I+c-d))/b^2
```

Rubi [A] time = 0.38, antiderivative size = 265, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 5, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.385, Rules used = {5202, 2190, 2531, 2282, 6589}

$$\frac{i\text{PolyLog}\left(3,\frac{(-c-d+i)e^{2a+2bx}}{-c+d+i}\right)}{8b^2}-\frac{i\text{PolyLog}\left(3,\frac{(c+d+i)e^{2a+2bx}}{c-d+i}\right)}{8b^2}-\frac{ix\text{PolyLog}\left(2,\frac{(-c-d+i)e^{2a+2bx}}{-c+d+i}\right)}{4b}+\frac{ix\text{PolyLog}\left(2,\frac{(c+d+i)e}{c-d}\right.}{4b}$$

Antiderivative was successfully verified.

```
[In] Int[x*ArcCot[c + d*Coth[a + b*x]],x]
```

```
[Out] (x^2*ArcCot[c + d*Coth[a + b*x]])/2 - (I/4)*x^2*Log[1 - ((I - c - d)*E^(2*a
 + 2*b*x))/(I - c + d)] + (I/4)*x^2*Log[1 - ((I + c + d)*E^(2*a + 2*b*x))/(
I + c - d)] - ((I/4)*x*PolyLog[2, ((I - c - d)*E^(2*a + 2*b*x))/(I - c + d)
])/b + ((I/4)*x*PolyLog[2, ((I + c + d)*E^(2*a + 2*b*x))/(I + c - d)])/b +
((I/8)*PolyLog[3, ((I - c - d)*E^(2*a + 2*b*x))/(I - c + d)])/b^2 - ((I/8)*
PolyLog[3, ((I + c + d)*E^(2*a + 2*b*x))/(I + c - d)])/b^2
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] && !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] && !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 5202

```
Int[ArcCot[(c_.) + Coth[(a_.) + (b_.)*(x_)]*(d_.)]*((e_.) + (f_.)*(x_))^(m_
.), x_Symbol] :> Simp[((e + f*x)^(m + 1)*ArcCot[c + d*Coth[a + b*x]])/(f*(m
```

```
 + 1)), x] + (Dist[(I*b*(I - c - d))/(f*(m + 1)), Int[((e + f*x)^(m + 1)*E^
(2*a + 2*b*x))/(I - c + d - (I - c - d)*E^(2*a + 2*b*x)), x], x] - Dist[(I*
b*(I + c + d))/(f*(m + 1)), Int[((e + f*x)^(m + 1)*E^(2*a + 2*b*x))/(I + c
- d - (I + c + d)*E^(2*a + 2*b*x)), x], x]) /; FreeQ[{a, b, c, d, e, f}, x]
 && IGtQ[m, 0] && NeQ[(c - d)^2, -1]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int x\cot^{-1}(c+d\coth(a+bx))\,dx = \frac{1}{2}x^2\cot^{-1}(c+d\coth(a+bx))+\frac{1}{2}(b(1-i(c+d)))\int\frac{e^{2a+2bx}x^2}{i+c-d+(-i-c-d)e^{}}$$

$$=\frac{1}{2}x^2\cot^{-1}(c+d\coth(a+bx))-\frac{1}{4}ix^2\log\left(1-\frac{(i-c-d)e^{2a+2bx}}{i-c+d}\right)+\frac{1}{4}ix^2\log\Big($$

$$=\frac{1}{2}x^2\cot^{-1}(c+d\coth(a+bx))-\frac{1}{4}ix^2\log\left(1-\frac{(i-c-d)e^{2a+2bx}}{i-c+d}\right)+\frac{1}{4}ix^2\log\Big($$

$$=\frac{1}{2}x^2\cot^{-1}(c+d\coth(a+bx))-\frac{1}{4}ix^2\log\left(1-\frac{(i-c-d)e^{2a+2bx}}{i-c+d}\right)+\frac{1}{4}ix^2\log\Big($$

$$=\frac{1}{2}x^2\cot^{-1}(c+d\coth(a+bx))-\frac{1}{4}ix^2\log\left(1-\frac{(i-c-d)e^{2a+2bx}}{i-c+d}\right)+\frac{1}{4}ix^2\log\Big($$

Mathematica [A] time = 4.51, size = 225, normalized size = 0.85

$$\frac{1}{2}x^2\cot^{-1}(d\coth(a+bx)+c)-\frac{i\left(2b^2x^2\log\left(1+\frac{(c+d-i)e^{2(a+bx)}}{-c+d+i}\right)-2b^2x^2\log\left(1+\frac{(c+d+i)e^{2(a+bx)}}{-c+d-i}\right)+2bx\mathrm{Li}_2\left(\frac{(c+d-i)e^{2(a+bx)}}{c-d-i}\right.}{8b^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[x*ArcCot[c + d*Coth[a + b*x]],x]
```

```
[Out] (x^2*ArcCot[c + d*Coth[a + b*x]])/2 - ((I/8)*(2*b^2*x^2*Log[1 + ((-I + c +
d)*E^(2*(a + b*x)))/(I - c + d)] - 2*b^2*x^2*Log[1 + ((I + c + d)*E^(2*(a +
 b*x)))/(-I - c + d)] + 2*b*x*PolyLog[2, ((-I + c + d)*E^(2*(a + b*x)))/(-I
 + c - d)] - 2*b*x*PolyLog[2, ((I + c + d)*E^(2*(a + b*x)))/(I + c - d)] -
PolyLog[3, ((-I + c + d)*E^(2*(a + b*x)))/(-I + c - d)] + PolyLog[3, ((I +
c + d)*E^(2*(a + b*x)))/(I + c - d)]))/b^2
```

fricas [C] time = 1.08, size = 1087, normalized size = 4.10

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*arccot(c+d*coth(b*x+a)),x, algorithm="fricas")
```

```
[Out] 1/4*(2*b^2*x^2*arctan(sinh(b*x + a)/(d*cosh(b*x + a) + c*sinh(b*x + a))) -
2*I*b*x*dilog(1/2*sqrt((4*c^2 - 4*d^2 + 8*I*d + 4)/(c^2 - 2*c*d + d^2 + 1))
*(cosh(b*x + a) + sinh(b*x + a))) - 2*I*b*x*dilog(-1/2*sqrt((4*c^2 - 4*d^2
```

```
+ 8*I*d + 4)/(c^2 - 2*c*d + d^2 + 1))*(cosh(b*x + a) + sinh(b*x + a))) + 2*
I*b*x*dilog(1/2*sqrt((4*c^2 - 4*d^2 - 8*I*d + 4)/(c^2 - 2*c*d + d^2 + 1))*(
cosh(b*x + a) + sinh(b*x + a))) + 2*I*b*x*dilog(-1/2*sqrt((4*c^2 - 4*d^2 -
8*I*d + 4)/(c^2 - 2*c*d + d^2 + 1))*(cosh(b*x + a) + sinh(b*x + a))) - I*a^
2*log(2*(c^2 + 2*c*d + d^2 + 1)*cosh(b*x + a) + 2*(c^2 + 2*c*d + d^2 + 1)*s
inh(b*x + a) + (c^2 - d^2 - 2*I*d + 1)*sqrt((4*c^2 - 4*d^2 + 8*I*d + 4)/(c^
2 - 2*c*d + d^2 + 1))) - I*a^2*log(2*(c^2 + 2*c*d + d^2 + 1)*cosh(b*x + a)
+ 2*(c^2 + 2*c*d + d^2 + 1)*sinh(b*x + a) - (c^2 - d^2 - 2*I*d + 1)*sqrt((4
*c^2 - 4*d^2 + 8*I*d + 4)/(c^2 - 2*c*d + d^2 + 1))) + I*a^2*log(2*(c^2 + 2*
c*d + d^2 + 1)*cosh(b*x + a) + 2*(c^2 + 2*c*d + d^2 + 1)*sinh(b*x + a) + (c
^2 - d^2 + 2*I*d + 1)*sqrt((4*c^2 - 4*d^2 - 8*I*d + 4)/(c^2 - 2*c*d + d^2 +
 1))) + I*a^2*log(2*(c^2 + 2*c*d + d^2 + 1)*cosh(b*x + a) + 2*(c^2 + 2*c*d
+ d^2 + 1)*sinh(b*x + a) - (c^2 - d^2 + 2*I*d + 1)*sqrt((4*c^2 - 4*d^2 - 8*
I*d + 4)/(c^2 - 2*c*d + d^2 + 1))) + (-I*b^2*x^2 + I*a^2)*log(1/2*sqrt((4*c
^2 - 4*d^2 + 8*I*d + 4)/(c^2 - 2*c*d + d^2 + 1))*(cosh(b*x + a) + sinh(b*x
+ a)) + 1) + (-I*b^2*x^2 + I*a^2)*log(-1/2*sqrt((4*c^2 - 4*d^2 + 8*I*d + 4)
/(c^2 - 2*c*d + d^2 + 1))*(cosh(b*x + a) + sinh(b*x + a)) + 1) + (I*b^2*x^2
 - I*a^2)*log(1/2*sqrt((4*c^2 - 4*d^2 - 8*I*d + 4)/(c^2 - 2*c*d + d^2 + 1))
*(cosh(b*x + a) + sinh(b*x + a)) + 1) + (I*b^2*x^2 - I*a^2)*log(-1/2*sqrt((
4*c^2 - 4*d^2 - 8*I*d + 4)/(c^2 - 2*c*d + d^2 + 1))*(cosh(b*x + a) + sinh(b
*x + a)) + 1) + 2*I*polylog(3, 1/2*sqrt((4*c^2 - 4*d^2 + 8*I*d + 4)/(c^2 -
2*c*d + d^2 + 1))*(cosh(b*x + a) + sinh(b*x + a))) + 2*I*polylog(3, -1/2*sq
rt((4*c^2 - 4*d^2 + 8*I*d + 4)/(c^2 - 2*c*d + d^2 + 1))*(cosh(b*x + a) + si
nh(b*x + a))) - 2*I*polylog(3, 1/2*sqrt((4*c^2 - 4*d^2 - 8*I*d + 4)/(c^2 -
2*c*d + d^2 + 1))*(cosh(b*x + a) + sinh(b*x + a))) - 2*I*polylog(3, -1/2*sq
rt((4*c^2 - 4*d^2 - 8*I*d + 4)/(c^2 - 2*c*d + d^2 + 1))*(cosh(b*x + a) + si
nh(b*x + a))))/b^2
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x \operatorname{arccot}\left(d \coth\left(bx + a\right) + c\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*arccot(c+d*coth(b*x+a)),x, algorithm="giac")
```

```
[Out] integrate(x*arccot(d*coth(b*x + a) + c), x)
```

maple [C] time = 6.46, size = 6508, normalized size = 24.56

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*arccot(c+d*coth(b*x+a)),x)
```

```
[Out] result too large to display
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{2}\,x^2 \arctan\left(e^{(2\,bx+2\,a)} - 1, \left(ce^{(2\,a)} + de^{(2\,a)}\right)e^{(2\,bx)} - c + d\right) - 2\,bd \int \frac{x^2}{c^2 - 2\,cd + d^2 + \left(c^2 e^{(4\,a)} + 2\,cde^{(4\,a)} + d^2 e^{(4\,a)}\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*arccot(c+d*coth(b*x+a)),x, algorithm="maxima")
```

```
[Out] 1/2*x^2*arctan2(e^(2*b*x + 2*a) - 1, (c*e^(2*a) + d*e^(2*a))*e^(2*b*x) - c
+ d) - 2*b*d*integrate(x^2*e^(2*b*x + 2*a)/(c^2 - 2*c*d + d^2 + (c^2*e^(4*a
) + 2*c*d*e^(4*a) + d^2*e^(4*a) + e^(4*a))*e^(4*b*x) - 2*(c^2*e^(2*a) - d^2
*e^(2*a) + e^(2*a))*e^(2*b*x) + 1), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int x \operatorname{acot}\left(c + d \coth\left(a + b\,x\right)\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*acot(c + d*coth(a + b*x)),x)
[Out] int(x*acot(c + d*coth(a + b*x)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*acot(c+d*coth(b*x+a)),x)
[Out] Timed out
```

3.207 $\int \cot^{-1}(c+d\coth(a+bx))\,dx$

Optimal. Leaf size=174

$$-\frac{i\text{Li}_2\left(\frac{(-c-d+i)e^{2a+2bx}}{-c+d+i}\right)}{4b}+\frac{i\text{Li}_2\left(\frac{(c+d+i)e^{2a+2bx}}{c-d+i}\right)}{4b}-\frac{1}{2}ix\log\left(1-\frac{(-c-d+i)e^{2a+2bx}}{-c+d+i}\right)+\frac{1}{2}ix\log\left(1-\frac{(c+d+i)e^{2a+2bx}}{c-d+i}\right)+$$

```
[Out] x*arccot(c+d*coth(b*x+a))-1/2*I*x*ln(1-(I-c-d)*exp(2*b*x+2*a)/(I-c+d))+1/2*
I*x*ln(1-(I+c+d)*exp(2*b*x+2*a)/(I+c-d))-1/4*I*polylog(2,(I-c-d)*exp(2*b*x+
2*a)/(I-c+d))/b+1/4*I*polylog(2,(I+c+d)*exp(2*b*x+2*a)/(I+c-d))/b
```

Rubi [A] time = 0.23, antiderivative size = 174, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 4, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.364, Rules used = {5194, 2190, 2279, 2391}

$$-\frac{i\text{PolyLog}\left(2,\frac{(-c-d+i)e^{2a+2bx}}{-c+d+i}\right)}{4b}+\frac{i\text{PolyLog}\left(2,\frac{(c+d+i)e^{2a+2bx}}{c-d+i}\right)}{4b}-\frac{1}{2}ix\log\left(1-\frac{(-c-d+i)e^{2a+2bx}}{-c+d+i}\right)+\frac{1}{2}ix\log\left(1-\frac{(c-\right.$$

Antiderivative was successfully verified.

```
[In] Int[ArcCot[c + d*Coth[a + b*x]],x]
```

```
[Out] x*ArcCot[c + d*Coth[a + b*x]] - (I/2)*x*Log[1 - ((I - c - d)*E^(2*a + 2*b*x
))/(I - c + d)] + (I/2)*x*Log[1 - ((I + c + d)*E^(2*a + 2*b*x))/(I + c - d)
] - ((I/4)*PolyLog[2, ((I - c - d)*E^(2*a + 2*b*x))/(I - c + d)])/b + ((I/4
)*PolyLog[2, ((I + c + d)*E^(2*a + 2*b*x))/(I + c - d)])/b
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 5194

```
Int[ArcCot[(c_.) + Coth[(a_.) + (b_.)*(x_)]*(d_.)], x_Symbol] :> Simp[x*Arc
Cot[c + d*Coth[a + b*x]], x] + (Dist[I*b*(I - c - d), Int[(x*E^(2*a + 2*b*x
))/(I - c + d - (I - c - d)*E^(2*a + 2*b*x)), x], x] - Dist[I*b*(I + c + d)
, Int[(x*E^(2*a + 2*b*x))/(I + c - d - (I + c + d)*E^(2*a + 2*b*x)), x], x]
) /; FreeQ[{a, b, c, d}, x] && NeQ[(c - d)^2, -1]
```

Rubi steps

$$\int \cot^{-1}(c + d\coth(a + bx))\, dx = x\cot^{-1}(c + d\coth(a + bx)) + (b(1 - i(c + d))) \int \frac{e^{2a+2bx}x}{i + c - d + (-i - c - d)e^{2a+2bx}}$$

$$= x\cot^{-1}(c + d\coth(a + bx)) - \frac{1}{2}ix\log\left(1 - \frac{(i - c - d)e^{2a+2bx}}{i - c + d}\right) + \frac{1}{2}ix\log\left(1 - \frac{(i$$

$$= x\cot^{-1}(c + d\coth(a + bx)) - \frac{1}{2}ix\log\left(1 - \frac{(i - c - d)e^{2a+2bx}}{i - c + d}\right) + \frac{1}{2}ix\log\left(1 - \frac{(i$$

$$= x\cot^{-1}(c + d\coth(a + bx)) - \frac{1}{2}ix\log\left(1 - \frac{(i - c - d)e^{2a+2bx}}{i - c + d}\right) + \frac{1}{2}ix\log\left(1 - \frac{(i$$

Mathematica [**A**] time = 1.31, size = 287, normalized size = 1.65

$$x\cot^{-1}(d\coth(a+bx)+c) - \frac{d\text{Li}_2\left(\frac{\left(c^2+2dc+d^2+1\right)e^{2(a+bx)}}{c^2-d^2+2\sqrt{-d^2}+1}\right) - d\text{Li}_2\left(-\frac{\left(c^2+2dc+d^2+1\right)e^{2(a+bx)}}{-c^2+d^2+2\sqrt{-d^2}-1}\right) + 2d(a+bx)\log\left(1 - \frac{\left((c+d)^2+1\right)e}{c^2-d^2+2\sqrt{-}}\right.}{4b}$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcCot[c + d*Coth[a + b*x]],x]
```

```
[Out] x*ArcCot[c + d*Coth[a + b*x]] - (4*a*Sqrt[-d^2]*ArcTan[(1 + c^2 - d^2 - (1
+ c^2 + 2*c*d + d^2)*E^(2*(a + b*x)))/(2*d)] + 2*d*(a + b*x)*Log[1 - ((1 +
(c + d)^2)*E^(2*(a + b*x)))/(1 + c^2 - d^2 + 2*Sqrt[-d^2])] - 2*d*(a + b*x)
*Log[1 + ((1 + (c + d)^2)*E^(2*(a + b*x)))/(-1 - c^2 + d^2 + 2*Sqrt[-d^2])]
 + d*PolyLog[2, ((1 + c^2 + 2*c*d + d^2)*E^(2*(a + b*x)))/(1 + c^2 - d^2 +
2*Sqrt[-d^2])] - d*PolyLog[2, -(((1 + c^2 + 2*c*d + d^2)*E^(2*(a + b*x)))/(
-1 - c^2 + d^2 + 2*Sqrt[-d^2]))])/(4*b*Sqrt[-d^2])
```

fricas [**B**] time = 1.41, size = 839, normalized size = 4.82

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(c+d*coth(b*x+a)),x, algorithm="fricas")
```

```
[Out] 1/2*(2*b*x*arctan(sinh(b*x + a)/(d*cosh(b*x + a) + c*sinh(b*x + a))) + I*a*
log(2*(c^2 + 2*c*d + d^2 + 1)*cosh(b*x + a) + 2*(c^2 + 2*c*d + d^2 + 1)*sin
h(b*x + a) + (c^2 - d^2 - 2*I*d + 1)*sqrt((4*c^2 - 4*d^2 + 8*I*d + 4)/(c^2
- 2*c*d + d^2 + 1))) + I*a*log(2*(c^2 + 2*c*d + d^2 + 1)*cosh(b*x + a) + 2*
(c^2 + 2*c*d + d^2 + 1)*sinh(b*x + a) - (c^2 - d^2 - 2*I*d + 1)*sqrt((4*c^2
 - 4*d^2 + 8*I*d + 4)/(c^2 - 2*c*d + d^2 + 1))) - I*a*log(2*(c^2 + 2*c*d +
d^2 + 1)*cosh(b*x + a) + 2*(c^2 + 2*c*d + d^2 + 1)*sinh(b*x + a) + (c^2 - d
^2 + 2*I*d + 1)*sqrt((4*c^2 - 4*d^2 - 8*I*d + 4)/(c^2 - 2*c*d + d^2 + 1)))
- I*a*log(2*(c^2 + 2*c*d + d^2 + 1)*cosh(b*x + a) + 2*(c^2 + 2*c*d + d^2 +
1)*sinh(b*x + a) - (c^2 - d^2 + 2*I*d + 1)*sqrt((4*c^2 - 4*d^2 - 8*I*d + 4)
/(c^2 - 2*c*d + d^2 + 1))) + (-I*b*x - I*a)*log(1/2*sqrt((4*c^2 - 4*d^2 + 8
*I*d + 4)/(c^2 - 2*c*d + d^2 + 1))*(cosh(b*x + a) + sinh(b*x + a)) + 1) + (
-I*b*x - I*a)*log(-1/2*sqrt((4*c^2 - 4*d^2 + 8*I*d + 4)/(c^2 - 2*c*d + d^2
+ 1))*(cosh(b*x + a) + sinh(b*x + a)) + 1) + (I*b*x + I*a)*log(1/2*sqrt((4*
c^2 - 4*d^2 - 8*I*d + 4)/(c^2 - 2*c*d + d^2 + 1))*(cosh(b*x + a) + sinh(b*x
 + a)) + 1) + (I*b*x + I*a)*log(-1/2*sqrt((4*c^2 - 4*d^2 - 8*I*d + 4)/(c^2
- 2*c*d + d^2 + 1))*(cosh(b*x + a) + sinh(b*x + a)) + 1) - I*dilog(1/2*sqrt
((4*c^2 - 4*d^2 + 8*I*d + 4)/(c^2 - 2*c*d + d^2 + 1))*(cosh(b*x + a) + sinh
(b*x + a))) - I*dilog(-1/2*sqrt((4*c^2 - 4*d^2 + 8*I*d + 4)/(c^2 - 2*c*d +
```

```
d^2 + 1))*(cosh(b*x + a) + sinh(b*x + a))) + I*dilog(1/2*sqrt((4*c^2 - 4*d^
2 - 8*I*d + 4)/(c^2 - 2*c*d + d^2 + 1))*(cosh(b*x + a) + sinh(b*x + a))) +
I*dilog(-1/2*sqrt((4*c^2 - 4*d^2 - 8*I*d + 4)/(c^2 - 2*c*d + d^2 + 1))*(cos
h(b*x + a) + sinh(b*x + a))))/b
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \operatorname{arccot}\left(d \coth\left(bx+a\right)+c\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(c+d*coth(b*x+a)),x, algorithm="giac")
```

```
[Out] integrate(arccot(d*coth(b*x + a) + c), x)
```

maple [B] time = 0.58, size = 350, normalized size = 2.01

$$-\frac{\operatorname{arccot}\left(c+d\coth\left(bx+a\right)\right)\ln\left(d\coth\left(bx+a\right)-d\right)}{2b}+\frac{\operatorname{arccot}\left(c+d\coth\left(bx+a\right)\right)\ln\left(d\coth\left(bx+a\right)+d\right)}{2b}+\frac{i\ln}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arccot(c+d*coth(b*x+a)),x)
```

```
[Out] -1/2/b*arccot(c+d*coth(b*x+a))*ln(d*coth(b*x+a)-d)+1/2/b*arccot(c+d*coth(b*
x+a))*ln(d*coth(b*x+a)+d)+1/4*I/b*ln(d*coth(b*x+a)-d)*ln((-d*coth(b*x+a)+I-
c)/(I-c-d))-1/4*I/b*ln(d*coth(b*x+a)-d)*ln((I+d*coth(b*x+a)+c)/(I+c+d))+1/4
*I/b*dilog((-d*coth(b*x+a)+I-c)/(I-c-d))-1/4*I/b*dilog((I+d*coth(b*x+a)+c)/
(I+c+d))-1/4*I/b*ln(d*coth(b*x+a)+d)*ln((-d*coth(b*x+a)+I-c)/(I-c+d))+1/4*I
/b*ln(d*coth(b*x+a)+d)*ln((I+d*coth(b*x+a)+c)/(I+c-d))-1/4*I/b*dilog((-d*co
th(b*x+a)+I-c)/(I-c+d))+1/4*I/b*dilog((I+d*coth(b*x+a)+c)/(I+c-d))
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-4\,bd\int \frac{xe^{(2\,bx+2\,a)}}{c^2-2\,cd+d^2+\left(c^2e^{(4\,a)}+2\,cde^{(4\,a)}+d^2e^{(4\,a)}+e^{(4\,a)}\right)e^{(4\,bx)}-2\left(c^2e^{(2\,a)}-d^2e^{(2\,a)}+e^{(2\,a)}\right)e^{(2\,bx)}+1}\,dx+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(c+d*coth(b*x+a)),x, algorithm="maxima")
```

```
[Out] -4*b*d*integrate(x*e^(2*b*x + 2*a)/(c^2 - 2*c*d + d^2 + (c^2*e^(4*a) + 2*c*
d*e^(4*a) + d^2*e^(4*a) + e^(4*a))*e^(4*b*x) - 2*(c^2*e^(2*a) - d^2*e^(2*a)
 + e^(2*a))*e^(2*b*x) + 1), x) + x*arctan2(e^(2*b*x + 2*a) - 1, (c*e^(2*a)
+ d*e^(2*a))*e^(2*b*x) - c + d)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \operatorname{acot}\left(c+d\coth\left(a+b\,x\right)\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(acot(c + d*coth(a + b*x)),x)
```

```
[Out] int(acot(c + d*coth(a + b*x)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(acot(c+d*coth(b*x+a)),x)
```

```
[Out] Timed out
```

3.208 $\int \frac{\cot^{-1}(c+d\coth(a+bx))}{x}\,dx$

Optimal. Leaf size=18

$$\text{Int}\left(\frac{\cot^{-1}(d\coth(a+bx)+c)}{x},x\right)$$

```
[Out] CannotIntegrate(arccot(c+d*coth(b*x+a))/x,x)
```

Rubi [A] time = 0.08, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\cot^{-1}(c+d\coth(a+bx))}{x}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[ArcCot[c + d*Coth[a + b*x]]/x,x]
[Out] Defer[Int][ArcCot[c + d*Coth[a + b*x]]/x, x]
```

Rubi steps

$$\int \frac{\cot^{-1}(c+d\coth(a+bx))}{x}\,dx=\int \frac{\cot^{-1}(c+d\coth(a+bx))}{x}\,dx$$

Mathematica [A] time = 9.32, size = 0, normalized size = 0.00

$$\int \frac{\cot^{-1}(c+d\coth(a+bx))}{x}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[ArcCot[c + d*Coth[a + b*x]]/x,x]
[Out] Integrate[ArcCot[c + d*Coth[a + b*x]]/x, x]
```

fricas [A] time = 0.58, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\text{arccot}\,(d\coth\,(bx+a)+c)}{x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(c+d*coth(b*x+a))/x,x, algorithm="fricas")
[Out] integral(arccot(d*coth(b*x + a) + c)/x, x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\text{arccot}\,(d\coth\,(bx+a)+c)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(c+d*coth(b*x+a))/x,x, algorithm="giac")
[Out] integrate(arccot(d*coth(b*x + a) + c)/x, x)
```

maple [A] time = 1.58, size = 0, normalized size = 0.00

$$\int \frac{\text{arccot}\,(c+d\coth\,(bx+a))}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arccot(c+d*coth(b*x+a))/x,x)
```

```
[Out] int(arccot(c+d*coth(b*x+a))/x,x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{arccot}(d \coth(bx + a) + c)}{x}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(c+d*coth(b*x+a))/x,x, algorithm="maxima")
```

```
[Out] integrate(arccot(d*coth(b*x + a) + c)/x, x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.06

$$\int \frac{\operatorname{acot}\left(c + d \coth\left(a + b\,x\right)\right)}{x}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(acot(c + d*coth(a + b*x))/x,x)
```

```
[Out] int(acot(c + d*coth(a + b*x))/x, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(acot(c+d*coth(b*x+a))/x,x)
```

```
[Out] Timed out
```

3.209 $\int x^2 \cot^{-1}(c + (i + c)\coth(a + bx))\,dx$

Optimal. Leaf size=142

$$-\frac{i\text{Li}_4\left(ice^{2a+2bx}\right)}{8b^3}+\frac{ix\text{Li}_3\left(ice^{2a+2bx}\right)}{4b^2}-\frac{ix^2\text{Li}_2\left(ice^{2a+2bx}\right)}{4b}-\frac{1}{6}ix^3\log\left(1-ice^{2a+2bx}\right)+\frac{1}{3}x^3\cot^{-1}(c+(c+i)\coth(a+bx))+$$

```
[Out] 1/12*I*b*x^4+1/3*x^3*arccot(c+(I+c)*coth(b*x+a))-1/6*I*x^3*ln(1-I*c*exp(2*b
*x+2*a))-1/4*I*x^2*polylog(2,I*c*exp(2*b*x+2*a))/b+1/4*I*x*polylog(3,I*c*ex
p(2*b*x+2*a))/b^2-1/8*I*polylog(4,I*c*exp(2*b*x+2*a))/b^3
```

Rubi [A] time = 0.23, antiderivative size = 142, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 7, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.368, Rules used = {5198, 2184, 2190, 2531, 6609, 2282, 6589}

$$\frac{ix\text{PolyLog}\left(3,ice^{2a+2bx}\right)}{4b^2}-\frac{i\text{PolyLog}\left(4,ice^{2a+2bx}\right)}{8b^3}-\frac{ix^2\text{PolyLog}\left(2,ice^{2a+2bx}\right)}{4b}-\frac{1}{6}ix^3\log\left(1-ice^{2a+2bx}\right)+\frac{1}{3}x^3\cot^{-1}$$

Antiderivative was successfully verified.

```
[In] Int[x^2*ArcCot[c + (I + c)*Coth[a + b*x]],x]
```

```
[Out] (I/12)*b*x^4 + (x^3*ArcCot[c + (I + c)*Coth[a + b*x]])/3 - (I/6)*x^3*Log[1
- I*c*E^(2*a + 2*b*x)] - ((I/4)*x^2*PolyLog[2, I*c*E^(2*a + 2*b*x)])/b + ((
I/4)*x*PolyLog[3, I*c*E^(2*a + 2*b*x)])/b^2 - ((I/8)*PolyLog[4, I*c*E^(2*a
+ 2*b*x)])/b^3
```

Rule 2184

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x
_))))^(n_.)), x_Symbol] :> Simp[(c + d*x)^(m + 1)/(a*d*(m + 1)), x] - Dist[
b/a, Int[((c + d*x)^m*(F^(g*(e + f*x)))^n)/(a + b*(F^(g*(e + f*x)))^n), x],
 x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 5198

```
Int[ArcCot[(c_.) + Coth[(a_.) + (b_.)*(x_)]*(d_.)]*((e_.) + (f_.)*(x_))^(m_
.), x_Symbol] :> Simp[((e + f*x)^(m + 1)*ArcCot[c + d*Coth[a + b*x]])/(f*(m
 + 1)), x] + Dist[b/(f*(m + 1)), Int[(e + f*x)^(m + 1)/(c - d - c*E^(2*a +
2*b*x)), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && EqQ[(c - d
)^2, -1]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6609

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[((e + f*x)^m*PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p])/(b*c*p*Log[F]), x] - Dist[(f*m)/(b*c*p*Log[F]), Int[(e + f*x)^
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
 d, e, f, n, p}, x] && GtQ[m, 0]
```

Rubi steps

$$\int x^2 \cot^{-1}(c+(i+c)\coth(a+bx))\,dx = \frac{1}{3}x^3\cot^{-1}(c+(i+c)\coth(a+bx)) + \frac{1}{3}b\int \frac{x^3}{-i-ce^{2a+2bx}}\,dx$$
$$= \frac{1}{12}ibx^4 + \frac{1}{3}x^3\cot^{-1}(c+(i+c)\coth(a+bx)) + \frac{1}{3}(ibc)\int \frac{e^{2a+2bx}x^3}{-i-ce^{2a+2b}}$$
$$= \frac{1}{12}ibx^4 + \frac{1}{3}x^3\cot^{-1}(c+(i+c)\coth(a+bx)) - \frac{1}{6}ix^3\log\left(1-ice^{2a+2b}\right.$$
$$= \frac{1}{12}ibx^4 + \frac{1}{3}x^3\cot^{-1}(c+(i+c)\coth(a+bx)) - \frac{1}{6}ix^3\log\left(1-ice^{2a+2b}\right.$$
$$= \frac{1}{12}ibx^4 + \frac{1}{3}x^3\cot^{-1}(c+(i+c)\coth(a+bx)) - \frac{1}{6}ix^3\log\left(1-ice^{2a+2b}\right.$$
$$= \frac{1}{12}ibx^4 + \frac{1}{3}x^3\cot^{-1}(c+(i+c)\coth(a+bx)) - \frac{1}{6}ix^3\log\left(1-ice^{2a+2b}\right.$$
$$= \frac{1}{12}ibx^4 + \frac{1}{3}x^3\cot^{-1}(c+(i+c)\coth(a+bx)) - \frac{1}{6}ix^3\log\left(1-ice^{2a+2b}\right.$$

Mathematica [A] time = 0.22, size = 128, normalized size = 0.90

$$\frac{1}{3}x^3\cot^{-1}(c+(c+i)\coth(a+bx)) - \frac{i\left(4b^3x^3\log\left(1+\frac{ie^{-2(a+bx)}}{c}\right) - 6b^2x^2\text{Li}_2\left(-\frac{ie^{-2(a+bx)}}{c}\right) - 6bx\text{Li}_3\left(-\frac{ie^{-2(a+bx)}}{c}\right) - 3\text{Li}_4\right.}{24b^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*ArcCot[c + (I + c)*Coth[a + b*x]],x]
```

```
[Out] (x^3*ArcCot[c + (I + c)*Coth[a + b*x]])/3 - ((I/24)*(4*b^3*x^3*Log[1 + I/(c
*E^(2*(a + b*x)))] - 6*b^2*x^2*PolyLog[2, (-I)/(c*E^(2*(a + b*x)))] - 6*b*x
*PolyLog[3, (-I)/(c*E^(2*(a + b*x)))] - 3*PolyLog[4, (-I)/(c*E^(2*(a + b*x)
))]))/b^3
```

fricas [C] time = 0.81, size = 290, normalized size = 2.04

$$i\,b^4x^4 + 2i\,b^3x^3\log\left(\frac{\left(ce^{(2\,bx+2\,a)}+i\right)e^{(-2\,bx-2\,a)}}{c+i}\right) - 6i\,b^2x^2\text{Li}_2\left(\frac{1}{2}\sqrt{4i\,c}\,e^{(bx+a)}\right) - 6i\,b^2x^2\text{Li}_2\left(-\frac{1}{2}\sqrt{4i\,c}\,e^{(bx+a)}\right) - i\,a^4 + 2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*arccot(c+(I+c)*coth(b*x+a)),x, algorithm="fricas")
```

```
[Out] 1/12*(I*b^4*x^4 + 2*I*b^3*x^3*log((c*e^(2*b*x + 2*a) + I)*e^(-2*b*x - 2*a)/
(c + I)) - 6*I*b^2*x^2*dilog(1/2*sqrt(4*I*c)*e^(b*x + a)) - 6*I*b^2*x^2*dil
og(-1/2*sqrt(4*I*c)*e^(b*x + a)) - I*a^4 + 2*I*a^3*log(1/2*(2*c*e^(b*x + a)
 + I*sqrt(4*I*c))/c) + 2*I*a^3*log(1/2*(2*c*e^(b*x + a) - I*sqrt(4*I*c))/c)
 + 12*I*b*x*polylog(3, 1/2*sqrt(4*I*c)*e^(b*x + a)) + 12*I*b*x*polylog(3, -
1/2*sqrt(4*I*c)*e^(b*x + a)) + (-2*I*b^3*x^3 - 2*I*a^3)*log(1/2*sqrt(4*I*c)
*e^(b*x + a) + 1) + (-2*I*b^3*x^3 - 2*I*a^3)*log(-1/2*sqrt(4*I*c)*e^(b*x +
a) + 1) - 12*I*polylog(4, 1/2*sqrt(4*I*c)*e^(b*x + a)) - 12*I*polylog(4, -1
/2*sqrt(4*I*c)*e^(b*x + a)))/b^3
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^2 \operatorname{arccot}\left((c+i)\coth\left(bx+a\right)+c\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*arccot(c+(I+c)*coth(b*x+a)),x, algorithm="giac")
```

```
[Out] integrate(x^2*arccot((c + I)*coth(b*x + a) + c), x)
```

maple [C] time = 5.94, size = 1548, normalized size = 10.90

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*arccot(c+(I+c)*coth(b*x+a)),x)
```

```
[Out] -1/12*Pi*x^3*csgn((2*I*exp(2*b*x+2*a)+2*exp(2*b*x+2*a)*c)/(exp(2*b*x+2*a)-1
))^3-1/12*Pi*x^3*csgn((2*exp(2*b*x+2*a)*c+2*I)/(exp(2*b*x+2*a)-1))^3+1/4*I*
x*polylog(3,I*c*exp(2*b*x+2*a))/b^2-1/6*I*x^3*ln(1-I*c*exp(2*b*x+2*a))+1/12
*Pi*x^3*csgn(I*(2*exp(2*b*x+2*a)*c+2*I)/(exp(2*b*x+2*a)-1))^3+1/12*I*b*c/(I
+c)*x^4-1/4*I*x^2*polylog(2,I*c*exp(2*b*x+2*a))/b-1/2*I/b^2*a^2*ln(1-I*exp(
b*x+a)*(-I*c)^(1/2))*x-1/2*I/b^2*a^2*ln(1+I*exp(b*x+a)*(-I*c)^(1/2))*x-1/6*
I*x^3*ln(2*I*exp(2*b*x+2*a)+2*exp(2*b*x+2*a)*c)-1/4/b^3/(I+c)*a^4-1/12*b/(I
+c)*x^4+1/6*I*x^3*ln(2*exp(2*b*x+2*a)*c+2*I)+1/12*Pi*x^3*csgn((2*I*exp(2*b*
x+2*a)+2*exp(2*b*x+2*a)*c)/(exp(2*b*x+2*a)-1))^2-1/12*Pi*x^3*csgn(I*(2*exp(
2*b*x+2*a)*c+2*I)/(exp(2*b*x+2*a)-1))*csgn((2*exp(2*b*x+2*a)*c+2*I)/(exp(2*
b*x+2*a)-1))^2-1/12*Pi*x^3*csgn(I*(2*I*exp(2*b*x+2*a)+2*exp(2*b*x+2*a)*c)/(
exp(2*b*x+2*a)-1))*csgn((2*I*exp(2*b*x+2*a)+2*exp(2*b*x+2*a)*c)/(exp(2*b*x+
2*a)-1))+1/12*Pi*x^3*csgn(I*(2*exp(2*b*x+2*a)*c+2*I)/(exp(2*b*x+2*a)-1))*cs
gn((2*exp(2*b*x+2*a)*c+2*I)/(exp(2*b*x+2*a)-1))+1/6*I/b^3*a^3*ln(exp(2*b*x+
2*a)*c+I)+1/4*I/b^3*c/(I+c)*a^4+1/2*I/b^2*ln(1-I*c*exp(2*b*x+2*a))*x*a^2-1/
12*Pi*x^3*csgn(I/(exp(2*b*x+2*a)-1))*csgn(I*(2*I*exp(2*b*x+2*a)+2*exp(2*b*x
+2*a)*c))*csgn(I*(2*I*exp(2*b*x+2*a)+2*exp(2*b*x+2*a)*c)/(exp(2*b*x+2*a)-1)
)+1/3/b^3*a^3/(I+c)*ln(exp(b*x+a))-1/3/b^2/(I+c)*x*a^3-1/12*Pi*x^3*csgn(I*(
2*I*exp(2*b*x+2*a)+2*exp(2*b*x+2*a)*c)/(exp(2*b*x+2*a)-1))^3+1/12*Pi*x^3*cs
gn(I*(2*I*exp(2*b*x+2*a)+2*exp(2*b*x+2*a)*c)/(exp(2*b*x+2*a)-1))*csgn((2*I*
exp(2*b*x+2*a)+2*exp(2*b*x+2*a)*c)/(exp(2*b*x+2*a)-1))^2+1/12*Pi*x^3*csgn((
2*exp(2*b*x+2*a)*c+2*I)/(exp(2*b*x+2*a)-1))^2-1/3*I/b^3*c*a^3/(I+c)*ln(exp(
b*x+a))+1/3*I/b^2*c/(I+c)*x*a^3-1/8*I*polylog(4,I*c*exp(2*b*x+2*a))/b^3+1/1
2*Pi*x^3*csgn(I/(exp(2*b*x+2*a)-1))*csgn(I*(2*exp(2*b*x+2*a)*c+2*I))*csgn(I
*(2*exp(2*b*x+2*a)*c+2*I)/(exp(2*b*x+2*a)-1))-1/12*Pi*x^3*csgn(I/(exp(2*b*x
+2*a)-1))*csgn(I*(2*exp(2*b*x+2*a)*c+2*I)/(exp(2*b*x+2*a)-1))^2+1/12*Pi*x^3
*csgn(I/(exp(2*b*x+2*a)-1))*csgn(I*(2*I*exp(2*b*x+2*a)+2*exp(2*b*x+2*a)*c)/
(exp(2*b*x+2*a)-1))^2-1/12*Pi*x^3*csgn(I*(2*exp(2*b*x+2*a)*c+2*I))*csgn(I*(
2*exp(2*b*x+2*a)*c+2*I)/(exp(2*b*x+2*a)-1))^2+1/12*Pi*x^3*csgn(I*(2*I*exp(2
```

```
*b*x+2*a)+2*exp(2*b*x+2*a)*c))*csgn(I*(2*I*exp(2*b*x+2*a)+2*exp(2*b*x+2*a)*
c)/(exp(2*b*x+2*a)-1))^2+1/3*I/b^3*ln(1-I*c*exp(2*b*x+2*a))*a^3+1/4*I/b^3*p
olylog(2,I*c*exp(2*b*x+2*a))*a^2-1/2*I/b^3*a^3*ln(1-I*exp(b*x+a)*(-I*c)^(1/
2))-1/2*I/b^3*a^3*ln(1+I*exp(b*x+a)*(-I*c)^(1/2))-1/2*I/b^3*a^2*dilog(1-I*e
xp(b*x+a)*(-I*c)^(1/2))-1/2*I/b^3*a^2*dilog(1+I*exp(b*x+a)*(-I*c)^(1/2))
```

maxima [A] time = 2.01, size = 129, normalized size = 0.91

$$\frac{1}{3}x^3\operatorname{arccot}\left((c+i)\coth(bx+a)+c\right)-\frac{4}{9}\left(\frac{3x^4}{4ic-4}-\frac{4b^3x^3\log\left(-ice^{(2bx+2a)}+1\right)+6b^2x^2\mathrm{Li}_2\left(ice^{(2bx+2a)}\right)-6}{-2b^4(-ic+1)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*arccot(c+(I+c)*coth(b*x+a)),x, algorithm="maxima")
```

```
[Out] 1/3*x^3*arccot((c + I)*coth(b*x + a) + c) - 4/9*(3*x^4/(4*I*c - 4) - (4*b^3
*x^3*log(-I*c*e^(2*b*x + 2*a) + 1) + 6*b^2*x^2*dilog(I*c*e^(2*b*x + 2*a)) -
 6*b*x*polylog(3, I*c*e^(2*b*x + 2*a)) + 3*polylog(4, I*c*e^(2*b*x + 2*a)))
/(b^4*(2*I*c - 2)))*b*(c + I)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int x^2\operatorname{acot}\left(c+\coth\left(a+b\,x\right)\,\left(c+1\mathrm{i}\right)\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*acot(c + coth(a + b*x)*(c + 1i)),x)
```

```
[Out] int(x^2*acot(c + coth(a + b*x)*(c + 1i)), x)
```

sympy [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: CoercionFailed

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*acot(c+(I+c)*coth(b*x+a)),x)
```

```
[Out] Exception raised: CoercionFailed
```

3.210 $\int x \cot^{-1}(c + (i + c)\coth(a + bx))\,dx$

Optimal. Leaf size=113

$$\frac{i\text{Li}_3\left(ice^{2a+2bx}\right)}{8b^2}-\frac{ix\text{Li}_2\left(ice^{2a+2bx}\right)}{4b}-\frac{1}{4}ix^2\log\left(1-ice^{2a+2bx}\right)+\frac{1}{2}x^2\cot^{-1}(c+(c+i)\coth(a+bx))+\frac{1}{6}ibx^3$$

```
[Out] 1/6*I*b*x^3+1/2*x^2*arccot(c+(I+c)*coth(b*x+a))-1/4*I*x^2*ln(1-I*c*exp(2*b*
x+2*a))-1/4*I*x*polylog(2,I*c*exp(2*b*x+2*a))/b+1/8*I*polylog(3,I*c*exp(2*b
*x+2*a))/b^2
```

Rubi [A] time = 0.20, antiderivative size = 113, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.353, Rules used = {5198, 2184, 2190, 2531, 2282, 6589}

$$\frac{i\text{PolyLog}\left(3,ice^{2a+2bx}\right)}{8b^2}-\frac{ix\text{PolyLog}\left(2,ice^{2a+2bx}\right)}{4b}-\frac{1}{4}ix^2\log\left(1-ice^{2a+2bx}\right)+\frac{1}{2}x^2\cot^{-1}(c+(c+i)\coth(a+bx))+\frac{1}{6}ib$$

Antiderivative was successfully verified.

```
[In] Int[x*ArcCot[c + (I + c)*Coth[a + b*x]],x]
```

```
[Out] (I/6)*b*x^3 + (x^2*ArcCot[c + (I + c)*Coth[a + b*x]])/2 - (I/4)*x^2*Log[1 -
 I*c*E^(2*a + 2*b*x)] - ((I/4)*x*PolyLog[2, I*c*E^(2*a + 2*b*x)])/b + ((I/8
)*PolyLog[3, I*c*E^(2*a + 2*b*x)])/b^2
```

Rule 2184

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x
_))))^(n_.)), x_Symbol] :> Simp[(c + d*x)^(m + 1)/(a*d*(m + 1)), x] - Dist[
b/a, Int[((c + d*x)^m*(F^(g*(e + f*x)))^n)/(a + b*(F^(g*(e + f*x)))^n), x],
 x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 5198

```
Int[ArcCot[(c_.) + Coth[(a_.) + (b_.)*(x_)]*(d_.)]*((e_.) + (f_.)*(x_))^(m_
.), x_Symbol] :> Simp[((e + f*x)^(m + 1)*ArcCot[c + d*Coth[a + b*x]])/(f*(m
```

```
 + 1)), x] + Dist[b/(f*(m + 1)), Int[(e + f*x)^(m + 1)/(c - d - c*E^(2*a +
2*b*x)), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && EqQ[(c - d
)^2, -1]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int x\cot^{-1}(c+(i+c)\coth(a+bx))\,dx = \frac{1}{2}x^2\cot^{-1}(c+(i+c)\coth(a+bx))+\frac{1}{2}b\int\frac{x^2}{-i-ce^{2a+2bx}}\,dx$$

$$= \frac{1}{6}ibx^3+\frac{1}{2}x^2\cot^{-1}(c+(i+c)\coth(a+bx))+\frac{1}{2}(ibc)\int\frac{e^{2a+2bx}x^2}{-i-ce^{2a+2bx}}$$

$$= \frac{1}{6}ibx^3+\frac{1}{2}x^2\cot^{-1}(c+(i+c)\coth(a+bx))-\frac{1}{4}ix^2\log\left(1-ice^{2a+2bx}\right)$$

$$= \frac{1}{6}ibx^3+\frac{1}{2}x^2\cot^{-1}(c+(i+c)\coth(a+bx))-\frac{1}{4}ix^2\log\left(1-ice^{2a+2bx}\right)$$

$$= \frac{1}{6}ibx^3+\frac{1}{2}x^2\cot^{-1}(c+(i+c)\coth(a+bx))-\frac{1}{4}ix^2\log\left(1-ice^{2a+2bx}\right)$$

$$= \frac{1}{6}ibx^3+\frac{1}{2}x^2\cot^{-1}(c+(i+c)\coth(a+bx))-\frac{1}{4}ix^2\log\left(1-ice^{2a+2bx}\right)$$

Mathematica [A] time = 0.10, size = 102, normalized size = 0.90

$$\frac{1}{2}x^2\cot^{-1}(c+(c+i)\coth(a+bx))-\frac{i\left(2b^2x^2\log\left(1+\frac{ie^{-2(a+bx)}}{c}\right)-2bx\text{Li}_2\left(-\frac{ie^{-2(a+bx)}}{c}\right)-\text{Li}_3\left(-\frac{ie^{-2(a+bx)}}{c}\right)\right)}{8b^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[x*ArcCot[c + (I + c)*Coth[a + b*x]],x]
```

```
[Out] (x^2*ArcCot[c + (I + c)*Coth[a + b*x]])/2 - ((I/8)*(2*b^2*x^2*Log[1 + I/(c*
E^(2*(a + b*x)))] - 2*b*x*PolyLog[2, (-I)/(c*E^(2*(a + b*x)))] - PolyLog[3,
 (-I)/(c*E^(2*(a + b*x)))]))/b^2
```

fricas [C] time = 0.85, size = 244, normalized size = 2.16

$$2i\,b^3x^3+3i\,b^2x^2\log\left(\frac{\left(ce^{(2\,bx+2\,a)}+i\right)e^{(-2\,bx-2\,a)}}{c+i}\right)+2i\,a^3-6i\,bx\text{Li}_2\left(\frac{1}{2}\sqrt{4i\,c}\,e^{(bx+a)}\right)-6i\,bx\text{Li}_2\left(-\frac{1}{2}\sqrt{4i\,c}\,e^{(bx+a)}\right)-3i$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*arccot(c+(I+c)*coth(b*x+a)),x, algorithm="fricas")
```

```
[Out] 1/12*(2*I*b^3*x^3 + 3*I*b^2*x^2*log((c*e^(2*b*x + 2*a) + I)*e^(-2*b*x - 2*a
)/(c + I)) + 2*I*a^3 - 6*I*b*x*dilog(1/2*sqrt(4*I*c)*e^(b*x + a)) - 6*I*b*x
*dilog(-1/2*sqrt(4*I*c)*e^(b*x + a)) - 3*I*a^2*log(1/2*(2*c*e^(b*x + a) + I
*sqrt(4*I*c))/c) - 3*I*a^2*log(1/2*(2*c*e^(b*x + a) - I*sqrt(4*I*c))/c) + (
-3*I*b^2*x^2 + 3*I*a^2)*log(1/2*sqrt(4*I*c)*e^(b*x + a) + 1) + (-3*I*b^2*x^
2 + 3*I*a^2)*log(-1/2*sqrt(4*I*c)*e^(b*x + a) + 1) + 6*I*polylog(3, 1/2*sqr
t(4*I*c)*e^(b*x + a)) + 6*I*polylog(3, -1/2*sqrt(4*I*c)*e^(b*x + a)))/b^2
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x \operatorname{arccot}\left((c+i)\coth\left(bx+a\right)+c\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*arccot(c+(I+c)*coth(b*x+a)),x, algorithm="giac")
```

```
[Out] integrate(x*arccot((c + I)*coth(b*x + a) + c), x)
```

maple [C] time = 5.65, size = 1512, normalized size = 13.38

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*arccot(c+(I+c)*coth(b*x+a)),x)
```

```
[Out] 1/8*Pi*x^2*csgn((2*I*exp(2*b*x+2*a)+2*exp(2*b*x+2*a)*c)/(exp(2*b*x+2*a)-1))
^2+1/4*I*x^2*ln(2*exp(2*b*x+2*a)*c+2*I)+1/8*I*polylog(3,I*c*exp(2*b*x+2*a))
/b^2-1/4*I*x^2*ln(1-I*c*exp(2*b*x+2*a))-1/2/b^2*a^2/(I+c)*ln(exp(b*x+a))+1/
2*I/b^2*ln(1-I*exp(b*x+a)*(-I*c)^(1/2))*a^2+1/2*I/b^2*ln(1+I*exp(b*x+a)*(-I
*c)^(1/2))*a^2-1/4*I/b^2*ln(1-I*c*exp(2*b*x+2*a))*a^2-1/4*I/b^2*polylog(2,I
*c*exp(2*b*x+2*a))*a+1/2*I/b^2*a*dilog(1-I*exp(b*x+a)*(-I*c)^(1/2))+1/2*I/b
^2*a*dilog(1+I*exp(b*x+a)*(-I*c)^(1/2))+1/8*Pi*x^2*csgn(I/(exp(2*b*x+2*a)-1
))*csgn(I*(2*I*exp(2*b*x+2*a)+2*exp(2*b*x+2*a)*c)/(exp(2*b*x+2*a)-1))^2-1/4
*I*x*polylog(2,I*c*exp(2*b*x+2*a))/b-1/4*I/b^2*a^2*ln(exp(2*b*x+2*a)*c+I)-1
/4*I*x^2*ln(2*I*exp(2*b*x+2*a)+2*exp(2*b*x+2*a)*c)+1/3/b^2/(I+c)*a^3-1/6*b*
x^3/(I+c)+1/8*Pi*x^2*csgn((2*exp(2*b*x+2*a)*c+2*I)/(exp(2*b*x+2*a)-1))^2-1/
8*Pi*x^2*csgn(I*(2*exp(2*b*x+2*a)*c+2*I)/(exp(2*b*x+2*a)-1))*csgn((2*exp(2*
b*x+2*a)*c+2*I)/(exp(2*b*x+2*a)-1))^2+1/8*Pi*x^2*csgn(I/(exp(2*b*x+2*a)-1))
*csgn(I*(2*exp(2*b*x+2*a)*c+2*I))*csgn(I*(2*exp(2*b*x+2*a)*c+2*I)/(exp(2*b*
x+2*a)-1))-1/8*Pi*x^2*csgn(I/(exp(2*b*x+2*a)-1))*csgn(I*(2*I*exp(2*b*x+2*a)
+2*exp(2*b*x+2*a)*c))*csgn(I*(2*I*exp(2*b*x+2*a)+2*exp(2*b*x+2*a)*c)/(exp(2
*b*x+2*a)-1))-1/8*Pi*x^2*csgn((2*exp(2*b*x+2*a)*c+2*I)/(exp(2*b*x+2*a)-1))^
3-1/2*I/b*c/(I+c)*x*a^2+1/2*I/b^2*c*a^2/(I+c)*ln(exp(b*x+a))-1/8*Pi*x^2*csg
n(I*(2*I*exp(2*b*x+2*a)+2*exp(2*b*x+2*a)*c)/(exp(2*b*x+2*a)-1))^3-1/8*Pi*x^
2*csgn((2*I*exp(2*b*x+2*a)+2*exp(2*b*x+2*a)*c)/(exp(2*b*x+2*a)-1))^3+1/8*Pi
*x^2*csgn(I*(2*exp(2*b*x+2*a)*c+2*I)/(exp(2*b*x+2*a)-1))^3-1/8*Pi*x^2*csgn(
I*(2*exp(2*b*x+2*a)*c+2*I))*csgn(I*(2*exp(2*b*x+2*a)*c+2*I)/(exp(2*b*x+2*a)
-1))^2+1/8*Pi*x^2*csgn(I*(2*I*exp(2*b*x+2*a)+2*exp(2*b*x+2*a)*c))*csgn(I*(2
*I*exp(2*b*x+2*a)+2*exp(2*b*x+2*a)*c)/(exp(2*b*x+2*a)-1))^2+1/8*Pi*x^2*csgn
(I*(2*I*exp(2*b*x+2*a)+2*exp(2*b*x+2*a)*c)/(exp(2*b*x+2*a)-1))*csgn((2*I*ex
p(2*b*x+2*a)+2*exp(2*b*x+2*a)*c)/(exp(2*b*x+2*a)-1))^2-1/8*Pi*x^2*csgn(I/(e
xp(2*b*x+2*a)-1))*csgn(I*(2*exp(2*b*x+2*a)*c+2*I)/(exp(2*b*x+2*a)-1))^2-1/3
*I/b^2*c/(I+c)*a^3+1/6*I*b*c/(I+c)*x^3+1/2/b/(I+c)*x*a^2+1/2*I/b*ln(1-I*exp
(b*x+a)*(-I*c)^(1/2))*x*a+1/2*I/b*ln(1+I*exp(b*x+a)*(-I*c)^(1/2))*x*a-1/2*I
/b*ln(1-I*c*exp(2*b*x+2*a))*x*a-1/8*Pi*x^2*csgn(I*(2*I*exp(2*b*x+2*a)+2*exp
(2*b*x+2*a)*c)/(exp(2*b*x+2*a)-1))*csgn((2*I*exp(2*b*x+2*a)+2*exp(2*b*x+2*a
)*c)/(exp(2*b*x+2*a)-1))+1/8*Pi*x^2*csgn(I*(2*exp(2*b*x+2*a)*c+2*I)/(exp(2*
b*x+2*a)-1))*csgn((2*exp(2*b*x+2*a)*c+2*I)/(exp(2*b*x+2*a)-1))
```

maxima [A] time = 1.98, size = 107, normalized size = 0.95

$$-\left(\frac{2\,x^3}{3i\,c-3}-\frac{2\,b^2x^2\log\left(-i\,ce^{(2\,bx+2\,a)}+1\right)+2\,bx\mathrm{Li}_2\left(i\,ce^{(2\,bx+2\,a)}\right)-\mathrm{Li}_3(i\,ce^{(2\,bx+2\,a)})}{-2\,b^3(-i\,c+1)}\right)b(c+i)+\frac{1}{2}\,x^2\operatorname{arccot}\left((c+i)\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*arccot(c+(I+c)*coth(b*x+a)),x, algorithm="maxima")
```

```
[Out] -(2*x^3/(3*I*c - 3) - (2*b^2*x^2*log(-I*c*e^(2*b*x + 2*a) + 1) + 2*b*x*dilo
g(I*c*e^(2*b*x + 2*a)) - polylog(3, I*c*e^(2*b*x + 2*a)))/(b^3*(2*I*c - 2))
)*b*(c + I) + 1/2*x^2*arccot((c + I)*coth(b*x + a) + c)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int x\,\mathrm{acot}\left(c+\coth\left(a+b\,x\right)\,\left(c+1\mathrm{i}\right)\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*acot(c + coth(a + b*x)*(c + 1i)),x)
```

```
[Out] int(x*acot(c + coth(a + b*x)*(c + 1i)), x)
```

sympy [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: CoercionFailed

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*acot(c+(I+c)*coth(b*x+a)),x)
```

```
[Out] Exception raised: CoercionFailed
```

3.211 $\int \cot^{-1}(c+(i+c)\coth(a+bx))\,dx$

Optimal. Leaf size=79

$$-\frac{i\text{Li}_2\left(ice^{2a+2bx}\right)}{4b}-\frac{1}{2}ix\log\left(1-ice^{2a+2bx}\right)+x\cot^{-1}(c+(c+i)\coth(a+bx))+\frac{1}{2}ibx^2$$

```
[Out] 1/2*I*b*x^2+x*arccot(c+(I+c)*coth(b*x+a))-1/2*I*x*ln(1-I*c*exp(2*b*x+2*a))-
1/4*I*polylog(2,I*c*exp(2*b*x+2*a))/b
```

Rubi [A] time = 0.12, antiderivative size = 79, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333, Rules used = {5190, 2184, 2190, 2279, 2391}

$$-\frac{i\text{PolyLog}\left(2,ice^{2a+2bx}\right)}{4b}-\frac{1}{2}ix\log\left(1-ice^{2a+2bx}\right)+x\cot^{-1}(c+(c+i)\coth(a+bx))+\frac{1}{2}ibx^2$$

Antiderivative was successfully verified.

```
[In] Int[ArcCot[c + (I + c)*Coth[a + b*x]],x]
```

```
[Out] (I/2)*b*x^2 + x*ArcCot[c + (I + c)*Coth[a + b*x]] - (I/2)*x*Log[1 - I*c*E^(
2*a + 2*b*x)] - ((I/4)*PolyLog[2, I*c*E^(2*a + 2*b*x)])/b
```

Rule 2184

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x
_))))^(n_.)), x_Symbol] :> Simp[(c + d*x)^(m + 1)/(a*d*(m + 1)), x] - Dist[
b/a, Int[((c + d*x)^m*(F^(g*(e + f*x)))^n)/(a + b*(F^(g*(e + f*x)))^n), x],
 x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 5190

```
Int[ArcCot[(c_.) + Coth[(a_.) + (b_.)*(x_)]*(d_.)], x_Symbol] :> Simp[x*Arc
Cot[c + d*Coth[a + b*x]], x] + Dist[b, Int[x/(c - d - c*E^(2*a + 2*b*x)), x
], x] /; FreeQ[{a, b, c, d}, x] && EqQ[(c - d)^2, -1]
```

Rubi steps

$$\int \cot^{-1}(c+(i+c)\coth(a+bx))\,dx = x\cot^{-1}(c+(i+c)\coth(a+bx)) + b\int \frac{x}{-i-ce^{2a+2bx}}\,dx$$
$$= \frac{1}{2}ibx^2 + x\cot^{-1}(c+(i+c)\coth(a+bx)) + (ibc)\int \frac{e^{2a+2bx}x}{-i-ce^{2a+2bx}}\,dx$$
$$= \frac{1}{2}ibx^2 + x\cot^{-1}(c+(i+c)\coth(a+bx)) - \frac{1}{2}ix\log\left(1-ice^{2a+2bx}\right) + \frac{1}{2}i$$
$$= \frac{1}{2}ibx^2 + x\cot^{-1}(c+(i+c)\coth(a+bx)) - \frac{1}{2}ix\log\left(1-ice^{2a+2bx}\right) + \frac{i\mathrm{S}}{}$$
$$= \frac{1}{2}ibx^2 + x\cot^{-1}(c+(i+c)\coth(a+bx)) - \frac{1}{2}ix\log\left(1-ice^{2a+2bx}\right) - \frac{i\mathrm{Li}}{}$$

Mathematica [A] time = 0.71, size = 71, normalized size = 0.90

$$x\cot^{-1}(c+(c+i)\coth(a+bx)) - \frac{i\left(2bx\log\left(1+\frac{ie^{-2(a+bx)}}{c}\right) - \mathrm{Li}_2\left(-\frac{ie^{-2(a+bx)}}{c}\right)\right)}{4b}$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcCot[c + (I + c)*Coth[a + b*x]],x]
```

```
[Out] x*ArcCot[c + (I + c)*Coth[a + b*x]] - ((I/4)*(2*b*x*Log[1 + I/(c*E^(2*(a +
b*x)))] - PolyLog[2, (-I)/(c*E^(2*(a + b*x)))]))/b
```

fricas [B] time = 0.70, size = 186, normalized size = 2.35

$$\frac{i\,b^2x^2 + i\,bx\log\left(\frac{\left(ce^{(2\,bx+2\,a)}+i\right)e^{(-2\,bx-2\,a)}}{c+i}\right) - i\,a^2 + (-i\,bx - i\,a)\log\left(\frac{1}{2}\sqrt{4i\,c}\,e^{(bx+a)}+1\right) + (-i\,bx - i\,a)\log\left(-\frac{1}{2}\sqrt{4i\,c}\right.}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(c+(I+c)*coth(b*x+a)),x, algorithm="fricas")
```

```
[Out] 1/2*(I*b^2*x^2 + I*b*x*log((c*e^(2*b*x + 2*a) + I)*e^(-2*b*x - 2*a)/(c + I)
) - I*a^2 + (-I*b*x - I*a)*log(1/2*sqrt(4*I*c)*e^(b*x + a) + 1) + (-I*b*x -
 I*a)*log(-1/2*sqrt(4*I*c)*e^(b*x + a) + 1) + I*a*log(1/2*(2*c*e^(b*x + a)
+ I*sqrt(4*I*c))/c) + I*a*log(1/2*(2*c*e^(b*x + a) - I*sqrt(4*I*c))/c) - I*
dilog(1/2*sqrt(4*I*c)*e^(b*x + a)) - I*dilog(-1/2*sqrt(4*I*c)*e^(b*x + a)))
/b
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \operatorname{arccot}\left((c+i)\coth(bx+a)+c\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(c+(I+c)*coth(b*x+a)),x, algorithm="giac")
```

```
[Out] integrate(arccot((c + I)*coth(b*x + a) + c), x)
```

maple [B] time = 0.75, size = 1381, normalized size = 17.48

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arccot(c+(I+c)*coth(b*x+a)),x)
```

```
[Out] -1/8*I/(I+c)^2/b*ln(I+c+(I+c)*coth(b*x+a))^2-1/4/(I+c)^2/b*ln(I+c+(I+c)*cot
h(b*x+a))^2*c-1/2/(I+c)^2/b*dilog(-1/2*I*(I+c+(I+c)*coth(b*x+a)))*c-1/2/(I+
c)^2/b*dilog(-1/2*(-c-(I+c)*coth(b*x+a)+I)/c)*c+1/2/(I+c)^2/b*dilog((-c-(I+
c)*coth(b*x+a)-I)/(-2*I-2*c))*c-1/4*I/(I+c)^2/b*dilog(-1/2*I*(I+c+(I+c)*cot
h(b*x+a)))-1/4*I/(I+c)^2/b*dilog(-1/2*(-c-(I+c)*coth(b*x+a)+I)/c)+1/4*I/(I+
c)^2/b*dilog(-1/2*(-c-(I+c)*coth(b*x+a)+I)/c)*c^2-1/2/(I+c)^2/b*ln(-1/2*I*(
I+c+(I+c)*coth(b*x+a)))*ln(-1/2*I*(-c-(I+c)*coth(b*x+a)+I))*c-1/2/(I+c)^2/b
*ln(c-(I+c)*coth(b*x+a)+I)*ln(-1/2*(-c-(I+c)*coth(b*x+a)+I)/c)*c+1/2/(I+c)^
2/b*ln(c-(I+c)*coth(b*x+a)+I)*ln((-c-(I+c)*coth(b*x+a)-I)/(-2*I-2*c))*c+1/(
I+c)/b*arccot(c+(I+c)*coth(b*x+a))/(2*I+2*c)*ln(c-(I+c)*coth(b*x+a)+I)-1/(I
+c)/b*arccot(c+(I+c)*coth(b*x+a))/(2*I+2*c)*ln(I+c+(I+c)*coth(b*x+a))+1/4*I
/(I+c)^2/b*dilog(-1/2*I*(I+c+(I+c)*coth(b*x+a)))*c^2-1/4*I/(I+c)^2/b*dilog(
(-c-(I+c)*coth(b*x+a)-I)/(-2*I-2*c))*c^2+1/4*I/(I+c)^2/b*ln(I+c+(I+c)*coth(
b*x+a))*ln(-1/2*I*(-c-(I+c)*coth(b*x+a)+I))-1/4*I/(I+c)^2/b*ln(-1/2*I*(I+c+
(I+c)*coth(b*x+a)))*ln(-1/2*I*(-c-(I+c)*coth(b*x+a)+I))-1/4*I/(I+c)^2/b*ln(
c-(I+c)*coth(b*x+a)+I)*ln(-1/2*(-c-(I+c)*coth(b*x+a)+I)/c)+1/4*I/(I+c)^2/b*
ln(c-(I+c)*coth(b*x+a)+I)*ln((-c-(I+c)*coth(b*x+a)-I)/(-2*I-2*c))+1/8*I/(I+
c)^2/b*ln(I+c+(I+c)*coth(b*x+a))^2*c^2+1/2/(I+c)^2/b*ln(I+c+(I+c)*coth(b*x+
a))*ln(-1/2*I*(-c-(I+c)*coth(b*x+a)+I))*c+1/4*I/(I+c)^2/b*dilog((-c-(I+c)*c
oth(b*x+a)-I)/(-2*I-2*c))+1/(I+c)/b*arccot(c+(I+c)*coth(b*x+a))/(2*I+2*c)*l
n(I+c+(I+c)*coth(b*x+a))*c^2-1/(I+c)/b*arccot(c+(I+c)*coth(b*x+a))/(2*I+2*c
)*ln(c-(I+c)*coth(b*x+a)+I)*c^2-1/4*I/(I+c)^2/b*ln(I+c+(I+c)*coth(b*x+a))*l
n(-1/2*I*(-c-(I+c)*coth(b*x+a)+I))*c^2+1/4*I/(I+c)^2/b*ln(-1/2*I*(I+c+(I+c)
*coth(b*x+a)))*ln(-1/2*I*(-c-(I+c)*coth(b*x+a)+I))*c^2+1/4*I/(I+c)^2/b*ln(c
-(I+c)*coth(b*x+a)+I)*ln(-1/2*(-c-(I+c)*coth(b*x+a)+I)/c)*c^2-1/4*I/(I+c)^2
/b*ln(c-(I+c)*coth(b*x+a)+I)*ln((-c-(I+c)*coth(b*x+a)-I)/(-2*I-2*c))*c^2+2*
I/(I+c)/b*arccot(c+(I+c)*coth(b*x+a))/(2*I+2*c)*ln(I+c+(I+c)*coth(b*x+a))*c
-2*I/(I+c)/b*arccot(c+(I+c)*coth(b*x+a))/(2*I+2*c)*ln(c-(I+c)*coth(b*x+a)+I
)*c
```

maxima [A] time = 2.01, size = 80, normalized size = 1.01

$$-2\,b(c+i)\left(\frac{2\,x^2}{2i\,c-2}-\frac{2\,bx\log\left(-i\,ce^{(2\,bx+2\,a)}+1\right)+\mathrm{Li}_2\left(i\,ce^{(2\,bx+2\,a)}\right)}{-2\,b^2(-i\,c+1)}\right)+x\,\mathrm{arccot}\left((c+i)\coth\left(bx+a\right)+c\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(c+(I+c)*coth(b*x+a)),x, algorithm="maxima")
```

```
[Out] -2*b*(c + I)*(2*x^2/(2*I*c - 2) - (2*b*x*log(-I*c*e^(2*b*x + 2*a) + 1) + di
log(I*c*e^(2*b*x + 2*a)))/(b^2*(2*I*c - 2))) + x*arccot((c + I)*coth(b*x +
a) + c)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \mathrm{acot}\left(c+\coth\left(a+b\,x\right)\,\left(c+1\mathrm{i}\right)\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(acot(c + coth(a + b*x)*(c + 1i)),x)
```

```
[Out] int(acot(c + coth(a + b*x)*(c + 1i)), x)
```

sympy [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: CoercionFailed

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(acot(c+(I+c)*coth(b*x+a)),x)
```

```
[Out] Exception raised: CoercionFailed
```

3.212 $\int \frac{\cot^{-1}(c+(i+c)\coth(a+bx))}{x}\,dx$

Optimal. Leaf size=22

$$\text{Int}\left(\frac{\cot^{-1}(c+(c+i)\coth(a+bx))}{x},x\right)$$

```
[Out] CannotIntegrate(arccot(c+(I+c)*coth(b*x+a))/x,x)
```

Rubi [A] time = 0.08, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\cot^{-1}(c+(i+c)\coth(a+bx))}{x}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[ArcCot[c + (I + c)*Coth[a + b*x]]/x,x]
```

```
[Out] Defer[Int][ArcCot[c + (I + c)*Coth[a + b*x]]/x, x]
```

Rubi steps

$$\int \frac{\cot^{-1}(c+(i+c)\coth(a+bx))}{x}\,dx=\int \frac{\cot^{-1}(c+(i+c)\coth(a+bx))}{x}\,dx$$

Mathematica [A] time = 3.42, size = 0, normalized size = 0.00

$$\int \frac{\cot^{-1}(c+(i+c)\coth(a+bx))}{x}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[ArcCot[c + (I + c)*Coth[a + b*x]]/x,x]
```

```
[Out] Integrate[ArcCot[c + (I + c)*Coth[a + b*x]]/x, x]
```

fricas [A] time = 0.67, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{i\log\left(\frac{\left(ce^{(2\,bx+2\,a)}+i\right)e^{(-2\,bx-2\,a)}}{c+i}\right)}{2\,x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(c+(I+c)*coth(b*x+a))/x,x, algorithm="fricas")
```

```
[Out] integral(1/2*I*log((c*e^(2*b*x + 2*a) + I)*e^(-2*b*x - 2*a)/(c + I))/x, x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{arccot}\left((c+i)\coth\left(bx+a\right)+c\right)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(c+(I+c)*coth(b*x+a))/x,x, algorithm="giac")
```

```
[Out] integrate(arccot((c + I)*coth(b*x + a) + c)/x, x)
```

maple [A] time = 2.15, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{arccot}\left(c + (i + c)\coth\left(bx + a\right)\right)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arccot(c+(I+c)*coth(b*x+a))/x,x)
```

```
[Out] int(arccot(c+(I+c)*coth(b*x+a))/x,x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$-i\,bx + \frac{1}{4}\left(-4i\,a + 2\,\arctan\left(\frac{1}{c}\right) - i\,\log\left(c^2 + 1\right)\right)\log(x) - \frac{1}{2}\int \frac{\arctan\left(\frac{e^{(-2\,bx - 2\,a)}}{c}\right)}{x}\,dx + \frac{1}{4}i\int \frac{\log\left(c^2 e^{(4\,bx + 4\,a)} + 1\right)}{x}\,d$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(c+(I+c)*coth(b*x+a))/x,x, algorithm="maxima")
```

```
[Out] -I*b*x + 1/4*(-4*I*a + 2*arctan(1/c) - I*log(c^2 + 1))*log(x) - 1/2*integra
te(arctan(e^(-2*b*x - 2*a)/c)/x, x) + 1/4*I*integrate(log(c^2*e^(4*b*x + 4*
a) + 1)/x, x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.05

$$\int \frac{\operatorname{acot}\left(c + \coth\left(a + b\,x\right)\,\left(c + 1{}\mathrm{i}\right)\right)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(acot(c + coth(a + b*x)*(c + 1i))/x,x)
```

```
[Out] int(acot(c + coth(a + b*x)*(c + 1i))/x, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(acot(c+(I+c)*coth(b*x+a))/x,x)
```

```
[Out] Timed out
```

3.213 $\int x^2 \cot^{-1}(c-(i-c)\coth(a+bx))\,dx$

Optimal. Leaf size=145

$$\frac{i\text{Li}_4\left(-ice^{2a+2bx}\right)}{8b^3}-\frac{ix\text{Li}_3\left(-ice^{2a+2bx}\right)}{4b^2}+\frac{ix^2\text{Li}_2\left(-ice^{2a+2bx}\right)}{4b}+\frac{1}{6}ix^3\log\left(1+ice^{2a+2bx}\right)+\frac{1}{3}x^3\cot^{-1}(c-(-c+i)\coth(a$$

```
[Out] -1/12*I*b*x^4+1/3*x^3*arccot(c-(I-c)*coth(b*x+a))+1/6*I*x^3*ln(1+I*c*exp(2*
b*x+2*a))+1/4*I*x^2*polylog(2,-I*c*exp(2*b*x+2*a))/b-1/4*I*x*polylog(3,-I*c
*exp(2*b*x+2*a))/b^2+1/8*I*polylog(4,-I*c*exp(2*b*x+2*a))/b^3
```

Rubi [A] time = 0.23, antiderivative size = 145, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 7, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.318, Rules used = {5198, 2184, 2190, 2531, 6609, 2282, 6589}

$$-\frac{ix\text{PolyLog}\left(3,-ice^{2a+2bx}\right)}{4b^2}+\frac{i\text{PolyLog}\left(4,-ice^{2a+2bx}\right)}{8b^3}+\frac{ix^2\text{PolyLog}\left(2,-ice^{2a+2bx}\right)}{4b}+\frac{1}{6}ix^3\log\left(1+ice^{2a+2bx}\right)+$$

Antiderivative was successfully verified.

```
[In] Int[x^2*ArcCot[c - (I - c)*Coth[a + b*x]],x]
```

```
[Out] (-I/12)*b*x^4 + (x^3*ArcCot[c - (I - c)*Coth[a + b*x]])/3 + (I/6)*x^3*Log[1
 + I*c*E^(2*a + 2*b*x)] + ((I/4)*x^2*PolyLog[2, (-I)*c*E^(2*a + 2*b*x)])/b
- ((I/4)*x*PolyLog[3, (-I)*c*E^(2*a + 2*b*x)])/b^2 + ((I/8)*PolyLog[4, (-I)
*c*E^(2*a + 2*b*x)])/b^3
```

Rule 2184

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x
_))))^(n_.)), x_Symbol] :> Simp[(c + d*x)^(m + 1)/(a*d*(m + 1)), x] - Dist[
b/a, Int[((c + d*x)^m*(F^(g*(e + f*x)))^n)/(a + b*(F^(g*(e + f*x)))^n), x],
 x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 5198

```
Int[ArcCot[(c_.) + Coth[(a_.) + (b_.)*(x_)]*(d_.)]*((e_.) + (f_.)*(x_))^(m_
.), x_Symbol] :> Simp[((e + f*x)^(m + 1)*ArcCot[c + d*Coth[a + b*x]])/(f*(m
 + 1)), x] + Dist[b/(f*(m + 1)), Int[(e + f*x)^(m + 1)/(c - d - c*E^(2*a +
2*b*x)), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && EqQ[(c - d
)^2, -1]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6609

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[((e + f*x)^m*PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p])/(b*c*p*Log[F]), x] - Dist[(f*m)/(b*c*p*Log[F]), Int[(e + f*x)^
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
 d, e, f, n, p}, x] && GtQ[m, 0]
```

Rubi steps

$$\int x^2 \cot^{-1}(c-(i-c)\coth(a+bx))\,dx = \frac{1}{3}x^3\cot^{-1}(c-(i-c)\coth(a+bx)) + \frac{1}{3}b\int \frac{x^3}{i-ce^{2a+2bx}}\,dx$$
$$= -\frac{1}{12}ibx^4 + \frac{1}{3}x^3\cot^{-1}(c-(i-c)\coth(a+bx)) - \frac{1}{3}(ibc)\int \frac{e^{2a+2bx}x^3}{i-ce^{2a+2bx}}\,d$$
$$= -\frac{1}{12}ibx^4 + \frac{1}{3}x^3\cot^{-1}(c-(i-c)\coth(a+bx)) + \frac{1}{6}ix^3\log\left(1+ice^{2a+2bx}\right)$$
$$= -\frac{1}{12}ibx^4 + \frac{1}{3}x^3\cot^{-1}(c-(i-c)\coth(a+bx)) + \frac{1}{6}ix^3\log\left(1+ice^{2a+2bx}\right)$$
$$= -\frac{1}{12}ibx^4 + \frac{1}{3}x^3\cot^{-1}(c-(i-c)\coth(a+bx)) + \frac{1}{6}ix^3\log\left(1+ice^{2a+2bx}\right)$$
$$= -\frac{1}{12}ibx^4 + \frac{1}{3}x^3\cot^{-1}(c-(i-c)\coth(a+bx)) + \frac{1}{6}ix^3\log\left(1+ice^{2a+2bx}\right)$$
$$= -\frac{1}{12}ibx^4 + \frac{1}{3}x^3\cot^{-1}(c-(i-c)\coth(a+bx)) + \frac{1}{6}ix^3\log\left(1+ice^{2a+2bx}\right)$$

Mathematica [A] time = 0.24, size = 128, normalized size = 0.88

$$\frac{i\left(4b^3x^3\log\left(1-\frac{ie^{-2(a+bx)}}{c}\right)-6b^2x^2\text{Li}_2\left(\frac{ie^{-2(a+bx)}}{c}\right)-6bx\text{Li}_3\left(\frac{ie^{-2(a+bx)}}{c}\right)-3\text{Li}_4\left(\frac{ie^{-2(a+bx)}}{c}\right)\right)}{24b^3}+\frac{1}{3}x^3\cot^{-1}(c+(c-i)\coth(a$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*ArcCot[c - (I - c)*Coth[a + b*x]],x]
```

```
[Out] (x^3*ArcCot[c + (-I + c)*Coth[a + b*x]])/3 + ((I/24)*(4*b^3*x^3*Log[1 - I/(
c*E^(2*(a + b*x)))] - 6*b^2*x^2*PolyLog[2, I/(c*E^(2*(a + b*x)))] - 6*b*x*P
olyLog[3, I/(c*E^(2*(a + b*x)))] - 3*PolyLog[4, I/(c*E^(2*(a + b*x)))]))/b^
3
```

fricas [C] time = 0.61, size = 290, normalized size = 2.00

$$-i\,b^4x^4+2i\,b^3x^3\log\left(\frac{(c-i)e^{(2\,bx+2\,a)}}{ce^{(2\,bx+2\,a)}-i}\right)+6i\,b^2x^2\text{Li}_2\left(\frac{1}{2}\sqrt{-4i\,c}\,e^{(bx+a)}\right)+6i\,b^2x^2\text{Li}_2\left(-\frac{1}{2}\sqrt{-4i\,c}\,e^{(bx+a)}\right)+i\,a^4-2i\,a^3\log$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*arccot(c-(I-c)*coth(b*x+a)),x, algorithm="fricas")
```

```
[Out] 1/12*(-I*b^4*x^4 + 2*I*b^3*x^3*log((c - I)*e^(2*b*x + 2*a)/(c*e^(2*b*x + 2*
a) - I)) + 6*I*b^2*x^2*dilog(1/2*sqrt(-4*I*c)*e^(b*x + a)) + 6*I*b^2*x^2*di
log(-1/2*sqrt(-4*I*c)*e^(b*x + a)) + I*a^4 - 2*I*a^3*log(1/2*(2*c*e^(b*x +
a) + I*sqrt(-4*I*c))/c) - 2*I*a^3*log(1/2*(2*c*e^(b*x + a) - I*sqrt(-4*I*c)
)/c) - 12*I*b*x*polylog(3, 1/2*sqrt(-4*I*c)*e^(b*x + a)) - 12*I*b*x*polylog
(3, -1/2*sqrt(-4*I*c)*e^(b*x + a)) + (2*I*b^3*x^3 + 2*I*a^3)*log(1/2*sqrt(-
4*I*c)*e^(b*x + a) + 1) + (2*I*b^3*x^3 + 2*I*a^3)*log(-1/2*sqrt(-4*I*c)*e^(
b*x + a) + 1) + 12*I*polylog(4, 1/2*sqrt(-4*I*c)*e^(b*x + a)) + 12*I*polylo
g(4, -1/2*sqrt(-4*I*c)*e^(b*x + a)))/b^3
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^2 \operatorname{arccot}\left((c-i)\coth\left(bx+a\right)+c\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*arccot(c-(I-c)*coth(b*x+a)),x, algorithm="giac")
```

```
[Out] integrate(x^2*arccot((c - I)*coth(b*x + a) + c), x)
```

maple [C] time = 6.10, size = 1571, normalized size = 10.83

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*arccot(c-(I-c)*coth(b*x+a)),x)
```

```
[Out] 1/12*Pi*x^3*csgn(I*(2*exp(2*b*x+2*a)*c-2*I)/(exp(2*b*x+2*a)-1))^3+1/8*I*pol
ylog(4,-I*c*exp(2*b*x+2*a))/b^3+1/4*I*x^2*polylog(2,-I*c*exp(2*b*x+2*a))/b+
1/6*I*x^3*ln(1+I*c*exp(2*b*x+2*a))-1/4*I*x*polylog(3,-I*c*exp(2*b*x+2*a))/b
^2+1/3*I/b^2*c/(I-c)*x*a^3-1/3*I/b^3*c*a^3/(I-c)*ln(exp(b*x+a))-1/12*Pi*x^3
*csgn(I*(2*exp(2*b*x+2*a)*c-2*I))*csgn(I*(2*exp(2*b*x+2*a)*c-2*I)/(exp(2*b*
x+2*a)-1))^2-1/2*I/b^2*ln(1+I*c*exp(2*b*x+2*a))*x*a^2+1/2*I/b^2*a^2*ln(1+I*
exp(b*x+a)*(I*c)^(1/2))*x+1/2*I/b^2*a^2*ln(1-I*exp(b*x+a)*(I*c)^(1/2))*x+1/
2*I/b^3*a^3*ln(1+I*exp(b*x+a)*(I*c)^(1/2))+1/2*I/b^3*a^3*ln(1-I*exp(b*x+a)*
(I*c)^(1/2))+1/2*I/b^3*a^2*dilog(1+I*exp(b*x+a)*(I*c)^(1/2))+1/2*I/b^3*a^2*
dilog(1-I*exp(b*x+a)*(I*c)^(1/2))-1/3/b^3*a^3/(I-c)*ln(exp(b*x+a))+1/3/b^2/
(I-c)*x*a^3+1/3*Pi*x^3-1/12*Pi*x^3*csgn(I*(-2*I*exp(2*b*x+2*a)+2*exp(2*b*x+
2*a)*c)/(exp(2*b*x+2*a)-1))^3+1/12*Pi*x^3*csgn(I*(-2*I*exp(2*b*x+2*a)+2*exp
(2*b*x+2*a)*c))*csgn(I*(-2*I*exp(2*b*x+2*a)+2*exp(2*b*x+2*a)*c)/(exp(2*b*x+
2*a)-1))^2-1/12*Pi*x^3*csgn(I*(2*exp(2*b*x+2*a)*c-2*I)/(exp(2*b*x+2*a)-1))*
csgn((2*exp(2*b*x+2*a)*c-2*I)/(exp(2*b*x+2*a)-1))^2+1/12*Pi*x^3*csgn(I*(-2*
I*exp(2*b*x+2*a)+2*exp(2*b*x+2*a)*c)/(exp(2*b*x+2*a)-1))*csgn((-2*I*exp(2*b
*x+2*a)+2*exp(2*b*x+2*a)*c)/(exp(2*b*x+2*a)-1))^2-1/12*Pi*x^3*csgn(I/(exp(2
*b*x+2*a)-1))*csgn(I*(2*exp(2*b*x+2*a)*c-2*I))*csgn(I*(2*exp(2*b*x+2*a)*c-2
*I)/(exp(2*b*x+2*a)-1))+1/12*Pi*x^3*csgn(I/(exp(2*b*x+2*a)-1))*csgn(I*(-2*I
*exp(2*b*x+2*a)+2*exp(2*b*x+2*a)*c))*csgn(I*(-2*I*exp(2*b*x+2*a)+2*exp(2*b*
x+2*a)*c)/(exp(2*b*x+2*a)-1))+1/4/b^3/(I-c)*a^4+1/12*b/(I-c)*x^4-1/3*I/b^3*
ln(1+I*c*exp(2*b*x+2*a))*a^3-1/4*I/b^3*polylog(2,-I*c*exp(2*b*x+2*a))*a^2+1
/6*I*x^3*ln(2*I*exp(2*b*x+2*a)-2*exp(2*b*x+2*a)*c)-1/12*Pi*x^3*csgn((-2*I*e
xp(2*b*x+2*a)+2*exp(2*b*x+2*a)*c)/(exp(2*b*x+2*a)-1))^3-1/12*Pi*x^3*csgn((2
*exp(2*b*x+2*a)*c-2*I)/(exp(2*b*x+2*a)-1))^3-1/12*Pi*x^3*csgn((2*exp(2*b*x+
2*a)*c-2*I)/(exp(2*b*x+2*a)-1))^2+1/4*I/b^3*c/(I-c)*a^4+1/12*I*b*c/(I-c)*x^
4-1/12*Pi*x^3*csgn((-2*I*exp(2*b*x+2*a)+2*exp(2*b*x+2*a)*c)/(exp(2*b*x+2*a)
-1))^2-1/6*I/b^3*a^3*ln(-exp(2*b*x+2*a)*c+I)+1/12*Pi*x^3*csgn(I*(-2*I*exp(2
*b*x+2*a)+2*exp(2*b*x+2*a)*c)/(exp(2*b*x+2*a)-1))*csgn((-2*I*exp(2*b*x+2*a)
```

```
+2*exp(2*b*x+2*a)*c)/(exp(2*b*x+2*a)-1))-1/6*I*x^3*ln(-2*exp(2*b*x+2*a)*c+2
*I)-1/12*Pi*x^3*csgn(I*(2*exp(2*b*x+2*a)*c-2*I)/(exp(2*b*x+2*a)-1))*csgn((2
*exp(2*b*x+2*a)*c-2*I)/(exp(2*b*x+2*a)-1))+1/12*Pi*x^3*csgn(I/(exp(2*b*x+2*
a)-1))*csgn(I*(2*exp(2*b*x+2*a)*c-2*I)/(exp(2*b*x+2*a)-1))^2-1/12*Pi*x^3*cs
gn(I/(exp(2*b*x+2*a)-1))*csgn(I*(-2*I*exp(2*b*x+2*a)+2*exp(2*b*x+2*a)*c)/(e
xp(2*b*x+2*a)-1))^2
```

maxima [A] time = 2.01, size = 129, normalized size = 0.89

$$\frac{1}{3}\,x^3\,\mathrm{arccot}\left((c-i)\coth\left(bx+a\right)+c\right)+\frac{4}{9}\left(\frac{3\,x^4}{4i\,c+4}-\frac{4\,b^3x^3\log\left(i\,ce^{(2\,bx+2\,a)}+1\right)+6\,b^2x^2\mathrm{Li}_2\left(-i\,ce^{(2\,bx+2\,a)}\right)-6\,bx}{-2\,b^4(-i\,c-1)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*arccot(c-(I-c)*coth(b*x+a)),x, algorithm="maxima")
```

```
[Out] 1/3*x^3*arccot((c - I)*coth(b*x + a) + c) + 4/9*(3*x^4/(4*I*c + 4) - (4*b^3
*x^3*log(I*c*e^(2*b*x + 2*a) + 1) + 6*b^2*x^2*dilog(-I*c*e^(2*b*x + 2*a)) -
 6*b*x*polylog(3, -I*c*e^(2*b*x + 2*a)) + 3*polylog(4, -I*c*e^(2*b*x + 2*a)
))/(b^4*(2*I*c + 2)))*b*(c - I)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int x^2\,\mathrm{acot}\left(c+\coth\left(a+b\,x\right)\,\left(c-\mathrm{i}\right)\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*acot(c + coth(a + b*x)*(c - 1i)),x)
```

```
[Out] int(x^2*acot(c + coth(a + b*x)*(c - 1i)), x)
```

sympy [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: CoercionFailed

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*acot(c-(I-c)*coth(b*x+a)),x)
```

```
[Out] Exception raised: CoercionFailed
```

3.214 $\int x \cot^{-1}(c-(i-c)\coth(a+bx))\,dx$

Optimal. Leaf size=116

$$-\frac{i\text{Li}_3\left(-ice^{2a+2bx}\right)}{8b^2}+\frac{ix\text{Li}_2\left(-ice^{2a+2bx}\right)}{4b}+\frac{1}{4}ix^2\log\left(1+ice^{2a+2bx}\right)+\frac{1}{2}x^2\cot^{-1}(c-(-c+i)\coth(a+bx))-\frac{1}{6}ibx^3$$

```
[Out] -1/6*I*b*x^3+1/2*x^2*arccot(c-(I-c)*coth(b*x+a))+1/4*I*x^2*ln(1+I*c*exp(2*b
*x+2*a))+1/4*I*x*polylog(2,-I*c*exp(2*b*x+2*a))/b-1/8*I*polylog(3,-I*c*exp(
2*b*x+2*a))/b^2
```

Rubi [A] time = 0.21, antiderivative size = 116, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.300, Rules used = {5198, 2184, 2190, 2531, 2282, 6589}

$$-\frac{i\text{PolyLog}\left(3,-ice^{2a+2bx}\right)}{8b^2}+\frac{ix\text{PolyLog}\left(2,-ice^{2a+2bx}\right)}{4b}+\frac{1}{4}ix^2\log\left(1+ice^{2a+2bx}\right)+\frac{1}{2}x^2\cot^{-1}(c-(-c+i)\coth(a+b$$

Antiderivative was successfully verified.

```
[In] Int[x*ArcCot[c - (I - c)*Coth[a + b*x]],x]
```

```
[Out] (-I/6)*b*x^3 + (x^2*ArcCot[c - (I - c)*Coth[a + b*x]])/2 + (I/4)*x^2*Log[1
+ I*c*E^(2*a + 2*b*x)] + ((I/4)*x*PolyLog[2, (-I)*c*E^(2*a + 2*b*x)])/b - (
(I/8)*PolyLog[3, (-I)*c*E^(2*a + 2*b*x)])/b^2
```

Rule 2184

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x
_))))^(n_.)), x_Symbol] :> Simp[(c + d*x)^(m + 1)/(a*d*(m + 1)), x] - Dist[
b/a, Int[((c + d*x)^m*(F^(g*(e + f*x)))^n)/(a + b*(F^(g*(e + f*x)))^n), x],
 x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 5198

```
Int[ArcCot[(c_.) + Coth[(a_.) + (b_.)*(x_)]*(d_.)]*((e_.) + (f_.)*(x_))^(m_
.), x_Symbol] :> Simp[((e + f*x)^(m + 1)*ArcCot[c + d*Coth[a + b*x]])/(f*(m
```

```
 + 1)), x] + Dist[b/(f*(m + 1)), Int[(e + f*x)^(m + 1)/(c - d - c*E^(2*a +
2*b*x)), x], x] /; FreeQ[{a, b, c, d, e, f}, x] && IGtQ[m, 0] && EqQ[(c - d
)^2, -1]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\begin{aligned}\int x\cot^{-1}(c-(i-c)\coth(a+bx))\,dx &= \frac{1}{2}x^2\cot^{-1}(c-(i-c)\coth(a+bx))+\frac{1}{2}b\int\frac{x^2}{i-ce^{2a+2bx}}\,dx\\ &= -\frac{1}{6}ibx^3+\frac{1}{2}x^2\cot^{-1}(c-(i-c)\coth(a+bx))-\frac{1}{2}(ibc)\int\frac{e^{2a+2bx}x^2}{i-ce^{2a+2bx}}\,dx\\ &= -\frac{1}{6}ibx^3+\frac{1}{2}x^2\cot^{-1}(c-(i-c)\coth(a+bx))+\frac{1}{4}ix^2\log\left(1+ice^{2a+2bx}\right)-\\ &= -\frac{1}{6}ibx^3+\frac{1}{2}x^2\cot^{-1}(c-(i-c)\coth(a+bx))+\frac{1}{4}ix^2\log\left(1+ice^{2a+2bx}\right)+\\ &= -\frac{1}{6}ibx^3+\frac{1}{2}x^2\cot^{-1}(c-(i-c)\coth(a+bx))+\frac{1}{4}ix^2\log\left(1+ice^{2a+2bx}\right)+\\ &= -\frac{1}{6}ibx^3+\frac{1}{2}x^2\cot^{-1}(c-(i-c)\coth(a+bx))+\frac{1}{4}ix^2\log\left(1+ice^{2a+2bx}\right)+\end{aligned}$$

Mathematica [A] time = 0.12, size = 102, normalized size = 0.88

$$\frac{i\left(2b^2x^2\log\left(1-\frac{ie^{-2(a+bx)}}{c}\right)-2bx\text{Li}_2\left(\frac{ie^{-2(a+bx)}}{c}\right)-\text{Li}_3\left(\frac{ie^{-2(a+bx)}}{c}\right)\right)}{8b^2}+\frac{1}{2}x^2\cot^{-1}(c+(c-i)\coth(a+bx))$$

Antiderivative was successfully verified.

```
[In] Integrate[x*ArcCot[c - (I - c)*Coth[a + b*x]],x]
```

```
[Out] (x^2*ArcCot[c + (-I + c)*Coth[a + b*x]])/2 + ((I/8)*(2*b^2*x^2*Log[1 - I/(c
*E^(2*(a + b*x)))] - 2*b*x*PolyLog[2, I/(c*E^(2*(a + b*x)))] - PolyLog[3, I
/(c*E^(2*(a + b*x)))]))/b^2
```

fricas [C] time = 0.67, size = 244, normalized size = 2.10

$$\frac{-2i\,b^3x^3+3i\,b^2x^2\log\left(\frac{(c-i)e^{(2\,bx+2\,a)}}{ce^{(2\,bx+2\,a)}-i}\right)-2i\,a^3+6i\,bx\text{Li}_2\left(\frac{1}{2}\sqrt{-4i\,c}\,e^{(bx+a)}\right)+6i\,bx\text{Li}_2\left(-\frac{1}{2}\sqrt{-4i\,c}\,e^{(bx+a)}\right)+3i\,a^2\log}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*arccot(c-(I-c)*coth(b*x+a)),x, algorithm="fricas")
```

```
[Out] 1/12*(-2*I*b^3*x^3 + 3*I*b^2*x^2*log((c - I)*e^(2*b*x + 2*a)/(c*e^(2*b*x +
2*a) - I)) - 2*I*a^3 + 6*I*b*x*dilog(1/2*sqrt(-4*I*c)*e^(b*x + a)) + 6*I*b*
x*dilog(-1/2*sqrt(-4*I*c)*e^(b*x + a)) + 3*I*a^2*log(1/2*(2*c*e^(b*x + a) +
 I*sqrt(-4*I*c))/c) + 3*I*a^2*log(1/2*(2*c*e^(b*x + a) - I*sqrt(-4*I*c))/c)
 + (3*I*b^2*x^2 - 3*I*a^2)*log(1/2*sqrt(-4*I*c)*e^(b*x + a) + 1) + (3*I*b^2
*x^2 - 3*I*a^2)*log(-1/2*sqrt(-4*I*c)*e^(b*x + a) + 1) - 6*I*polylog(3, 1/2
*sqrt(-4*I*c)*e^(b*x + a)) - 6*I*polylog(3, -1/2*sqrt(-4*I*c)*e^(b*x + a)))
/b^2
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x \operatorname{arccot}\left((c-i)\coth(bx+a)+c\right)\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*arccot(c-(I-c)*coth(b*x+a)),x, algorithm="giac")
```

```
[Out] integrate(x*arccot((c - I)*coth(b*x + a) + c), x)
```

maple [C] time = 5.79, size = 1535, normalized size = 13.23

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*arccot(c-(I-c)*coth(b*x+a)),x)
```

```
[Out] 1/4*I*x*polylog(2,-I*c*exp(2*b*x+2*a))/b+1/4*I*x^2*ln(1+I*c*exp(2*b*x+2*a))
+1/2/b^2*a^2/(I-c)*ln(exp(b*x+a))-1/2/b/(I-c)*x*a^2-1/8*Pi*x^2*csgn(I/(exp(
2*b*x+2*a)-1))*csgn(I*(2*exp(2*b*x+2*a)*c-2*I))*csgn(I*(2*exp(2*b*x+2*a)*c-
2*I)/(exp(2*b*x+2*a)-1))+1/8*Pi*x^2*csgn(I/(exp(2*b*x+2*a)-1))*csgn(I*(-2*I
*exp(2*b*x+2*a)+2*exp(2*b*x+2*a)*c))*csgn(I*(-2*I*exp(2*b*x+2*a)+2*exp(2*b*
x+2*a)*c)/(exp(2*b*x+2*a)-1))+1/2*I/b*ln(1+I*c*exp(2*b*x+2*a))*x*a-1/2*I/b*
a*ln(1+I*exp(b*x+a)*(I*c)^(1/2))*x-1/2*I/b*a*ln(1-I*exp(b*x+a)*(I*c)^(1/2))
*x+1/4*I/b^2*a^2*ln(-exp(2*b*x+2*a)*c+I)+1/2*I/b^2*c*a^2/(I-c)*ln(exp(b*x+a
))+1/2*Pi*x^2-1/8*Pi*x^2*csgn((2*exp(2*b*x+2*a)*c-2*I)/(exp(2*b*x+2*a)-1))^
2+1/8*Pi*x^2*csgn(I*(2*exp(2*b*x+2*a)*c-2*I)/(exp(2*b*x+2*a)-1))^3+1/4*I/b^
2*ln(1+I*c*exp(2*b*x+2*a))*a^2+1/4*I/b^2*polylog(2,-I*c*exp(2*b*x+2*a))*a-1
/2*I/b^2*a^2*ln(1+I*exp(b*x+a)*(I*c)^(1/2))-1/2*I/b^2*a^2*ln(1-I*exp(b*x+a)
*(I*c)^(1/2))-1/2*I/b^2*a*dilog(1+I*exp(b*x+a)*(I*c)^(1/2))-1/2*I/b^2*a*dil
og(1-I*exp(b*x+a)*(I*c)^(1/2))-1/8*Pi*x^2*csgn(I*(2*exp(2*b*x+2*a)*c-2*I))*
csgn(I*(2*exp(2*b*x+2*a)*c-2*I)/(exp(2*b*x+2*a)-1))^2+1/8*Pi*x^2*csgn(I*(-2
*I*exp(2*b*x+2*a)+2*exp(2*b*x+2*a)*c))*csgn(I*(-2*I*exp(2*b*x+2*a)+2*exp(2*
b*x+2*a)*c)/(exp(2*b*x+2*a)-1))^2-1/8*Pi*x^2*csgn(I*(2*exp(2*b*x+2*a)*c-2*I
)/(exp(2*b*x+2*a)-1))*csgn((2*exp(2*b*x+2*a)*c-2*I)/(exp(2*b*x+2*a)-1))^2+1
/8*Pi*x^2*csgn(I*(-2*I*exp(2*b*x+2*a)+2*exp(2*b*x+2*a)*c)/(exp(2*b*x+2*a)-1
))*csgn((-2*I*exp(2*b*x+2*a)+2*exp(2*b*x+2*a)*c)/(exp(2*b*x+2*a)-1))^2+1/4*
I*x^2*ln(2*I*exp(2*b*x+2*a)-2*exp(2*b*x+2*a)*c)+1/8*Pi*x^2*csgn(I*(-2*I*exp
(2*b*x+2*a)+2*exp(2*b*x+2*a)*c)/(exp(2*b*x+2*a)-1))*csgn((-2*I*exp(2*b*x+2*
a)+2*exp(2*b*x+2*a)*c)/(exp(2*b*x+2*a)-1))-1/8*Pi*x^2*csgn(I*(2*exp(2*b*x+2
*a)*c-2*I)/(exp(2*b*x+2*a)-1))*csgn((2*exp(2*b*x+2*a)*c-2*I)/(exp(2*b*x+2*a
)-1))-1/4*I*x^2*ln(-2*exp(2*b*x+2*a)*c+2*I)-1/8*Pi*x^2*csgn(I/(exp(2*b*x+2*
a)-1))*csgn(I*(-2*I*exp(2*b*x+2*a)+2*exp(2*b*x+2*a)*c)/(exp(2*b*x+2*a)-1))^
2+1/8*Pi*x^2*csgn(I/(exp(2*b*x+2*a)-1))*csgn(I*(2*exp(2*b*x+2*a)*c-2*I)/(ex
p(2*b*x+2*a)-1))^2-1/8*Pi*x^2*csgn((-2*I*exp(2*b*x+2*a)+2*exp(2*b*x+2*a)*c)
/(exp(2*b*x+2*a)-1))^3-1/8*Pi*x^2*csgn((2*exp(2*b*x+2*a)*c-2*I)/(exp(2*b*x+
2*a)-1))^3-1/8*Pi*x^2*csgn(I*(-2*I*exp(2*b*x+2*a)+2*exp(2*b*x+2*a)*c)/(exp(
2*b*x+2*a)-1))^3-1/2*I/b*c/(I-c)*x*a^2-1/8*Pi*x^2*csgn((-2*I*exp(2*b*x+2*a)
+2*exp(2*b*x+2*a)*c)/(exp(2*b*x+2*a)-1))^2-1/8*I*polylog(3,-I*c*exp(2*b*x+2
*a))/b^2-1/3*I/b^2*c/(I-c)*a^3+1/6*I*b*c/(I-c)*x^3-1/3/b^2/(I-c)*a^3+1/6*b*
x^3/(I-c)
```

maxima [A] time = 2.01, size = 106, normalized size = 0.91

$$\left(\frac{2\,x^3}{3i\,c+3}-\frac{2\,b^2x^2\log\left(i\,ce^{(2\,bx+2\,a)}+1\right)+2\,bx\mathrm{Li}_2\left(-i\,ce^{(2\,bx+2\,a)}\right)-\mathrm{Li}_3(-i\,ce^{(2\,bx+2\,a)})}{-2\,b^3(-i\,c-1)}\right)b(c-i)+\frac{1}{2}\,x^2\operatorname{arccot}((c-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*arccot(c-(I-c)*coth(b*x+a)),x, algorithm="maxima")
```

```
[Out] (2*x^3/(3*I*c + 3) - (2*b^2*x^2*log(I*c*e^(2*b*x + 2*a) + 1) + 2*b*x*dilog(
-I*c*e^(2*b*x + 2*a)) - polylog(3, -I*c*e^(2*b*x + 2*a)))/(b^3*(2*I*c + 2))
)*b*(c - I) + 1/2*x^2*arccot((c - I)*coth(b*x + a) + c)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int x \operatorname{acot}\left(c + \coth\left(a + b\, x\right)\, \left(c - \mathrm{i}\right)\right)\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*acot(c + coth(a + b*x)*(c - 1i)),x)
[Out] int(x*acot(c + coth(a + b*x)*(c - 1i)), x)
```

sympy [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: CoercionFailed

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*acot(c-(I-c)*coth(b*x+a)),x)
[Out] Exception raised: CoercionFailed
```

3.215 $\int \cot^{-1}(c-(i-c)\coth(a+bx))\,dx$

Optimal. Leaf size=82

$$\frac{i\text{Li}_2\left(-ice^{2a+2bx}\right)}{4b}+\frac{1}{2}ix\log\left(1+ice^{2a+2bx}\right)+x\cot^{-1}(c-(-c+i)\coth(a+bx))-\frac{1}{2}ibx^2$$

```
[Out] -1/2*I*b*x^2+x*arccot(c-(I-c)*coth(b*x+a))+1/2*I*x*ln(1+I*c*exp(2*b*x+2*a))
+1/4*I*polylog(2,-I*c*exp(2*b*x+2*a))/b
```

Rubi [A] time = 0.12, antiderivative size = 82, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.278, Rules used = {5190, 2184, 2190, 2279, 2391}

$$\frac{i\text{PolyLog}\left(2,-ice^{2a+2bx}\right)}{4b}+\frac{1}{2}ix\log\left(1+ice^{2a+2bx}\right)+x\cot^{-1}(c-(-c+i)\coth(a+bx))-\frac{1}{2}ibx^2$$

Antiderivative was successfully verified.

```
[In] Int[ArcCot[c - (I - c)*Coth[a + b*x]],x]
```

```
[Out] (-I/2)*b*x^2 + x*ArcCot[c - (I - c)*Coth[a + b*x]] + (I/2)*x*Log[1 + I*c*E^
(2*a + 2*b*x)] + ((I/4)*PolyLog[2, (-I)*c*E^(2*a + 2*b*x)])/b
```

Rule 2184

```
Int[((c_.) + (d_.)*(x_))^(m_.)/((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x
_))))^(n_.)), x_Symbol] :> Simp[(c + d*x)^(m + 1)/(a*d*(m + 1)), x] - Dist[
b/a, Int[((c + d*x)^m*(F^(g*(e + f*x)))^n)/(a + b*(F^(g*(e + f*x)))^n), x],
 x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2279

```
Int[Log[(a_) + (b_.)*((F_)^((e_.)*((c_.) + (d_.)*(x_))))^(n_.)], x_Symbol]
:> Dist[1/(d*e*n*Log[F]), Subst[Int[Log[a + b*x]/x, x], x, (F^(e*(c + d*x))
)^n], x] /; FreeQ[{F, a, b, c, d, e, n}, x] && GtQ[a, 0]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 5190

```
Int[ArcCot[(c_.) + Coth[(a_.) + (b_.)*(x_)]*(d_.)], x_Symbol] :> Simp[x*Arc
Cot[c + d*Coth[a + b*x]], x] + Dist[b, Int[x/(c - d - c*E^(2*a + 2*b*x)), x
], x] /; FreeQ[{a, b, c, d}, x] && EqQ[(c - d)^2, -1]
```

Rubi steps

$$\int \cot^{-1}(c-(i-c)\coth(a+bx))\,dx = x\cot^{-1}(c-(i-c)\coth(a+bx)) + b\int \frac{x}{i-ce^{2a+2bx}}\,dx$$
$$= -\frac{1}{2}ibx^2 + x\cot^{-1}(c-(i-c)\coth(a+bx)) - (ibc)\int \frac{e^{2a+2bx}x}{i-ce^{2a+2bx}}\,dx$$
$$= -\frac{1}{2}ibx^2 + x\cot^{-1}(c-(i-c)\coth(a+bx)) + \frac{1}{2}ix\log\left(1+ice^{2a+2bx}\right) - \frac{1}{2}i\int$$
$$= -\frac{1}{2}ibx^2 + x\cot^{-1}(c-(i-c)\coth(a+bx)) + \frac{1}{2}ix\log\left(1+ice^{2a+2bx}\right) - \frac{i\,\mathrm{Sub}}{}$$
$$= -\frac{1}{2}ibx^2 + x\cot^{-1}(c-(i-c)\coth(a+bx)) + \frac{1}{2}ix\log\left(1+ice^{2a+2bx}\right) + \frac{i\mathrm{Li}_2}{}$$

Mathematica [A] time = 0.72, size = 71, normalized size = 0.87

$$\frac{i\left(2bx\log\left(1-\frac{ie^{-2(a+bx)}}{c}\right)-\mathrm{Li}_2\left(\frac{ie^{-2(a+bx)}}{c}\right)\right)}{4b}+x\cot^{-1}(c+(c-i)\coth(a+bx))$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcCot[c - (I - c)*Coth[a + b*x]],x]
```

```
[Out] x*ArcCot[c + (-I + c)*Coth[a + b*x]] + ((I/4)*(2*b*x*Log[1 - I/(c*E^(2*(a +
 b*x)))] - PolyLog[2, I/(c*E^(2*(a + b*x)))]))/b
```

fricas [B] time = 0.72, size = 186, normalized size = 2.27

$$\frac{-i\,b^2x^2 + i\,bx\log\left(\frac{(c-i)e^{(2\,bx+2\,a)}}{ce^{(2\,bx+2\,a)}-i}\right) + i\,a^2 + (i\,bx+i\,a)\log\left(\frac{1}{2}\sqrt{-4i\,c}\,e^{(bx+a)}+1\right) + (i\,bx+i\,a)\log\left(-\frac{1}{2}\sqrt{-4i\,c}\,e^{(bx+a)}+\right.}{2\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(c-(I-c)*coth(b*x+a)),x, algorithm="fricas")
```

```
[Out] 1/2*(-I*b^2*x^2 + I*b*x*log((c - I)*e^(2*b*x + 2*a)/(c*e^(2*b*x + 2*a) - I)
) + I*a^2 + (I*b*x + I*a)*log(1/2*sqrt(-4*I*c)*e^(b*x + a) + 1) + (I*b*x +
I*a)*log(-1/2*sqrt(-4*I*c)*e^(b*x + a) + 1) - I*a*log(1/2*(2*c*e^(b*x + a)
+ I*sqrt(-4*I*c))/c) - I*a*log(1/2*(2*c*e^(b*x + a) - I*sqrt(-4*I*c))/c) +
I*dilog(1/2*sqrt(-4*I*c)*e^(b*x + a)) + I*dilog(-1/2*sqrt(-4*I*c)*e^(b*x +
a)))/b
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \operatorname{arccot}\left((c-i)\coth\left(bx+a\right)+c\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(c-(I-c)*coth(b*x+a)),x, algorithm="giac")
```

```
[Out] integrate(arccot((c - I)*coth(b*x + a) + c), x)
```

maple [B] time = 0.62, size = 1351, normalized size = 16.48

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arccot(c-(I-c)*coth(b*x+a)),x)
```

```
[Out] -1/b/(c-I)*arccot((c-I)*coth(b*x+a)+c)/(2*I-2*c)*ln((c-I)*coth(b*x+a)-c+I)+
1/8*I/b/(c-I)/(I-c)*ln((c-I)*coth(b*x+a)+c-I)^2*c^2+1/4*I/b/(c-I)/(I-c)*dil
og(1/2*(I+(c-I)*coth(b*x+a)+c)/c)*c^2-1/4*I/b/(c-I)/(I-c)*ln((c-I)*coth(b*x
+a)-c+I)*ln(1/2*(I+(c-I)*coth(b*x+a)+c)/c)-1/4*I/b/(c-I)/(I-c)*dilog(((c-I)
*coth(b*x+a)+c-I)/(-2*I+2*c))*c^2+1/4*I/b/(c-I)/(I-c)*ln((c-I)*coth(b*x+a)+
c-I)*ln(-1/2*I*(I+(c-I)*coth(b*x+a)+c))-1/2/b/(c-I)/(I-c)*ln((c-I)*coth(b*x
+a)+c-I)*ln(-1/2*I*(I+(c-I)*coth(b*x+a)+c))*c+1/2/b/(c-I)/(I-c)*ln((c-I)*co
th(b*x+a)-c+I)*ln(1/2*(I+(c-I)*coth(b*x+a)+c)/c)*c-1/2/b/(c-I)/(I-c)*ln((c-
I)*coth(b*x+a)-c+I)*ln(((c-I)*coth(b*x+a)+c-I)/(-2*I+2*c))*c+1/b/(c-I)*arcc
ot((c-I)*coth(b*x+a)+c)/(2*I-2*c)*ln((c-I)*coth(b*x+a)-c+I)*c^2-1/b/(c-I)*a
rccot((c-I)*coth(b*x+a)+c)/(2*I-2*c)*ln((c-I)*coth(b*x+a)+c-I)*c^2+1/4*I/b/
(c-I)/(I-c)*ln((c-I)*coth(b*x+a)-c+I)*ln(((c-I)*coth(b*x+a)+c-I)/(-2*I+2*c)
)-1/4*I/b/(c-I)/(I-c)*dilog(-1/2*I*(I+(c-I)*coth(b*x+a)+c))*c^2-1/2/b/(c-I)
/(I-c)*dilog(-1/2*I*(I+(c-I)*coth(b*x+a)+c))*c+1/4/b/(c-I)/(I-c)*ln((c-I)*c
oth(b*x+a)+c-I)^2*c+1/2/b/(c-I)/(I-c)*dilog(1/2*(I+(c-I)*coth(b*x+a)+c)/c)*
c-1/2/b/(c-I)/(I-c)*dilog(((c-I)*coth(b*x+a)+c-I)/(-2*I+2*c))*c+1/b/(c-I)*a
rccot((c-I)*coth(b*x+a)+c)/(2*I-2*c)*ln((c-I)*coth(b*x+a)+c-I)-1/4*I/b/(c-I
)/(I-c)*dilog(1/2*(I+(c-I)*coth(b*x+a)+c)/c)+1/4*I/b/(c-I)/(I-c)*dilog(((c-
I)*coth(b*x+a)+c-I)/(-2*I+2*c))+1/4*I/b/(c-I)/(I-c)*dilog(-1/2*I*(I+(c-I)*c
oth(b*x+a)+c))-1/8*I/b/(c-I)/(I-c)*ln((c-I)*coth(b*x+a)+c-I)^2+2*I/b/(c-I)*
arccot((c-I)*coth(b*x+a)+c)/(2*I-2*c)*ln((c-I)*coth(b*x+a)+c-I)*c-1/4*I/b/(
c-I)/(I-c)*ln((c-I)*coth(b*x+a)+c-I)*ln(-1/2*I*(I+(c-I)*coth(b*x+a)+c))*c^2
+1/4*I/b/(c-I)/(I-c)*ln((c-I)*coth(b*x+a)-c+I)*ln(1/2*(I+(c-I)*coth(b*x+a)+
c)/c)*c^2-1/4*I/b/(c-I)/(I-c)*ln((c-I)*coth(b*x+a)-c+I)*ln(((c-I)*coth(b*x+
a)+c-I)/(-2*I+2*c))*c^2-2*I/b/(c-I)*arccot((c-I)*coth(b*x+a)+c)/(2*I-2*c)*l
n((c-I)*coth(b*x+a)-c+I)*c
```

maxima [**A**] time = 2.03, size = 80, normalized size = 0.98

$$2\,b(c-i)\left(\frac{2\,x^2}{2i\,c+2}-\frac{2\,bx\log\left(i\,ce^{(2\,bx+2\,a)}+1\right)+\mathrm{Li}_2\left(-i\,ce^{(2\,bx+2\,a)}\right)}{-2\,b^2(-i\,c-1)}\right)+x\,\mathrm{arccot}\left((c-i)\coth\left(bx+a\right)+c\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(c-(I-c)*coth(b*x+a)),x, algorithm="maxima")
```

```
[Out] 2*b*(c - I)*(2*x^2/(2*I*c + 2) - (2*b*x*log(I*c*e^(2*b*x + 2*a) + 1) + dilo
g(-I*c*e^(2*b*x + 2*a)))/(b^2*(2*I*c + 2))) + x*arccot((c - I)*coth(b*x + a
) + c)
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.01

$$\int \mathrm{acot}\left(c+\coth\left(a+b\,x\right)\,\left(c-\mathrm{i}\right)\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(acot(c + coth(a + b*x)*(c - 1i)),x)
```

```
[Out] int(acot(c + coth(a + b*x)*(c - 1i)), x)
```

sympy [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: CoercionFailed

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(acot(c-(I-c)*coth(b*x+a)),x)
```

```
[Out] Exception raised: CoercionFailed
```

3.216 $\int \frac{\cot^{-1}(c-(i-c)\coth(a+bx))}{x}\,dx$

Optimal. Leaf size=25

$$\text{Int}\left(\frac{\cot^{-1}(c-(-c+i)\coth(a+bx))}{x},x\right)$$

```
[Out] CannotIntegrate(arccot(c-(I-c)*coth(b*x+a))/x,x)
```

Rubi [A] time = 0.11, antiderivative size = 0, normalized size of antiderivative = 0.00, number of steps used = 0, number of rules used = 0, integrand size = 0, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.000, Rules used = {}

$$\int \frac{\cot^{-1}(c-(i-c)\coth(a+bx))}{x}\,dx$$

Verification is Not applicable to the result.

```
[In] Int[ArcCot[c - (I - c)*Coth[a + b*x]]/x,x]
[Out] Defer[Int][ArcCot[c - (I - c)*Coth[a + b*x]]/x, x]
```

Rubi steps

$$\int \frac{\cot^{-1}(c-(i-c)\coth(a+bx))}{x}\,dx=\int \frac{\cot^{-1}(c-(i-c)\coth(a+bx))}{x}\,dx$$

Mathematica [A] time = 3.56, size = 0, normalized size = 0.00

$$\int \frac{\cot^{-1}(c-(i-c)\coth(a+bx))}{x}\,dx$$

Verification is Not applicable to the result.

```
[In] Integrate[ArcCot[c - (I - c)*Coth[a + b*x]]/x,x]
[Out] Integrate[ArcCot[c - (I - c)*Coth[a + b*x]]/x, x]
```

fricas [A] time = 0.72, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{i\log\left(\frac{(c-i)e^{(2\,bx+2\,a)}}{ce^{(2\,bx+2\,a)}-i}\right)}{2\,x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(c-(I-c)*coth(b*x+a))/x,x, algorithm="fricas")
[Out] integral(1/2*I*log((c - I)*e^(2*b*x + 2*a)/(c*e^(2*b*x + 2*a) - I))/x, x)
```

giac [A] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{arccot}\left((c-i)\coth\left(bx+a\right)+c\right)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(c-(I-c)*coth(b*x+a))/x,x, algorithm="giac")
[Out] integrate(arccot((c - I)*coth(b*x + a) + c)/x, x)
```

maple [A] time = 2.09, size = 0, normalized size = 0.00

$$\int \frac{\operatorname{arccot}(c-(i-c)\coth(bx+a))}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arccot(c-(I-c)*coth(b*x+a))/x,x)
```

```
[Out] int(arccot(c-(I-c)*coth(b*x+a))/x,x)
```

maxima [A] time = 0.00, size = 0, normalized size = 0.00

$$i\,bx+\frac{1}{2}\,\pi\log(x)-\frac{1}{4}\left(2\,\pi-4i\,a-2\,\arctan\left(\frac{1}{c}\right)-i\,\log\left(c^2+1\right)\right)\log(x)-\frac{1}{2}\int\frac{\arctan\left(\frac{e^{(-2\,bx-2\,a)}}{c}\right)}{x}\,dx-\frac{1}{4}i\int\frac{\log(}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(c-(I-c)*coth(b*x+a))/x,x, algorithm="maxima")
```

```
[Out] I*b*x + 1/2*pi*log(x) - 1/4*(2*pi - 4*I*a - 2*arctan(1/c) - I*log(c^2 + 1))
*log(x) - 1/2*integrate(arctan(e^(-2*b*x - 2*a)/c)/x, x) - 1/4*I*integrate(
log(c^2*e^(4*b*x + 4*a) + 1)/x, x)
```

mupad [A] time = 0.00, size = -1, normalized size = -0.04

$$\int \frac{\operatorname{acot}\left(c+\coth\left(a+b\,x\right)\,\left(c-\mathrm{i}\right)\right)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(acot(c + coth(a + b*x)*(c - 1i))/x,x)
```

```
[Out] int(acot(c + coth(a + b*x)*(c - 1i))/x, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(acot(c-(I-c)*coth(b*x+a))/x,x)
```

```
[Out] Timed out
```

3.217 $\int \frac{\left(a+b\cot^{-1}(cx^n)\right)\left(d+e\log\left(fx^m\right)\right)}{x}\,dx$

Optimal. Leaf size=187

$$ad\log(x)+\frac{ae\log^2\left(fx^m\right)}{2m}-\frac{ibd\text{Li}_2\left(-\frac{ix^{-n}}{c}\right)}{2n}+\frac{ibd\text{Li}_2\left(\frac{ix^{-n}}{c}\right)}{2n}-\frac{ibe\text{Li}_2\left(-\frac{ix^{-n}}{c}\right)\log\left(fx^m\right)}{2n}+\frac{ibe\text{Li}_2\left(\frac{ix^{-n}}{c}\right)\log\left(fx^m\right)}{2n}-\frac{iber}{}$$

```
[Out] a*d*ln(x)+1/2*a*e*ln(f*x^m)^2/m-1/2*I*b*d*polylog(2,-I/c/(x^n))/n-1/2*I*b*e
*ln(f*x^m)*polylog(2,-I/c/(x^n))/n+1/2*I*b*d*polylog(2,I/c/(x^n))/n+1/2*I*b
*e*ln(f*x^m)*polylog(2,I/c/(x^n))/n-1/2*I*b*e*m*polylog(3,-I/c/(x^n))/n^2+1
/2*I*b*e*m*polylog(3,I/c/(x^n))/n^2
```

Rubi [A] time = 0.61, antiderivative size = 187, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 9, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.375, Rules used = {2301, 6742, 5032, 4849, 2391, 5008, 5006, 2374, 6589}

$$-\frac{ibd\text{PolyLog}\left(2,-\frac{ix^{-n}}{c}\right)}{2n}+\frac{ibd\text{PolyLog}\left(2,\frac{ix^{-n}}{c}\right)}{2n}-\frac{ibe\log\left(fx^m\right)\text{PolyLog}\left(2,-\frac{ix^{-n}}{c}\right)}{2n}+\frac{ibe\log\left(fx^m\right)\text{PolyLog}\left(2,\frac{ix^{-n}}{c}\right)}{2n}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*ArcCot[c*x^n])*(d + e*Log[f*x^m]))/x,x]
```

```
[Out] a*d*Log[x] + (a*e*Log[f*x^m]^2)/(2*m) - ((I/2)*b*d*PolyLog[2, (-I)/(c*x^n)]
)/n - ((I/2)*b*e*Log[f*x^m]*PolyLog[2, (-I)/(c*x^n)])/n + ((I/2)*b*d*PolyLo
g[2, I/(c*x^n)])/n + ((I/2)*b*e*Log[f*x^m]*PolyLog[2, I/(c*x^n)])/n - ((I/2
)*b*e*m*PolyLog[3, (-I)/(c*x^n)])/n^2 + ((I/2)*b*e*m*PolyLog[3, I/(c*x^n)])
/n^2
```

Rule 2301

```
Int[((a_.) + Log[(c_.)*(x_)^(n_.)]*(b_.))/(x_), x_Symbol] :> Simp[(a + b*Lo
g[c*x^n])^2/(2*b*n), x] /; FreeQ[{a, b, c, n}, x]
```

Rule 2374

```
Int[(Log[(d_.)*((e_) + (f_.)*(x_)^(m_.))]*((a_.) + Log[(c_.)*(x_)^(n_.)]*(b
_.))^(p_.))/(x_), x_Symbol] :> -Simp[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x
^n])^p)/m, x] + Dist[(b*n*p)/m, Int[(PolyLog[2, -(d*f*x^m)]*(a + b*Log[c*x^
n])^(p - 1))/x, x], x] /; FreeQ[{a, b, c, d, e, f, m, n}, x] && IGtQ[p, 0]
&& EqQ[d*e, 1]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 4849

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))/(x_), x_Symbol] :> Simp[a*Log[x], x]
 + (Dist[(I*b)/2, Int[Log[1 - I/(c*x)]/x, x], x] - Dist[(I*b)/2, Int[Log[1
+ I/(c*x)]/x, x], x]) /; FreeQ[{a, b, c}, x]
```

Rule 5006

```
Int[(ArcCot[(c_.)*(x_)^(n_.)]*Log[(d_.)*(x_)^(m_.)])/(x_), x_Symbol] :> Dis
t[I/2, Int[(Log[d*x^m]*Log[1 - I/(c*x^n)])/x, x], x] - Dist[I/2, Int[(Log[d
*x^m]*Log[1 + I/(c*x^n)])/x, x], x] /; FreeQ[{c, d, m, n}, x]
```

Rule 5008

```
Int[(Log[(d_.)*(x_)^(m_.)]*(ArcCot[(c_.)*(x_)^(n_.)]*(b_.) + (a_)))/(x_), x
_Symbol] :> Dist[a, Int[Log[d*x^m]/x, x], x] + Dist[b, Int[(Log[d*x^m]*ArcC
ot[c*x^n])/x, x], x] /; FreeQ[{a, b, c, d, m, n}, x]
```

Rule 5032

```
Int[((a_.) + ArcCot[(c_.)*(x_)^(n_)]*(b_.))^(p_.)/(x_), x_Symbol] :> Dist[1
/n, Subst[Int[(a + b*ArcCot[c*x])^p/x, x], x, x^n], x] /; FreeQ[{a, b, c, n
}, x] && IGtQ[p, 0]
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int \frac{\left(a+b\cot^{-1}\left(cx^n\right)\right)\left(d+e\log\left(fx^m\right)\right)}{x}\,dx=\int\left(\frac{d\left(a+b\cot^{-1}\left(cx^n\right)\right)}{x}+\frac{e\left(a+b\cot^{-1}\left(cx^n\right)\right)\log\left(fx^m\right)}{x}\right)dx$$

$$=d\int\frac{a+b\cot^{-1}\left(cx^n\right)}{x}\,dx+e\int\frac{\left(a+b\cot^{-1}\left(cx^n\right)\right)\log\left(fx^m\right)}{x}\,dx$$

$$=(ae)\int\frac{\log\left(fx^m\right)}{x}\,dx+(be)\int\frac{\cot^{-1}\left(cx^n\right)\log\left(fx^m\right)}{x}\,dx+\frac{d\,\mathrm{Sub}}{}$$

$$=ad\log(x)+\frac{ae\log^2\left(fx^m\right)}{2m}+\frac{1}{2}(ibe)\int\frac{\log\left(fx^m\right)\log\left(1-\frac{ix^{-n}}{c}\right)}{x}$$

$$=ad\log(x)+\frac{ae\log^2\left(fx^m\right)}{2m}-\frac{ibd\mathrm{Li}_2\left(-\frac{ix^{-n}}{c}\right)}{2n}-\frac{ibe\log\left(fx^m\right)\mathrm{Li}_2\left(\right.}{2n}$$

$$=ad\log(x)+\frac{ae\log^2\left(fx^m\right)}{2m}-\frac{ibd\mathrm{Li}_2\left(-\frac{ix^{-n}}{c}\right)}{2n}-\frac{ibe\log\left(fx^m\right)\mathrm{Li}_2\left(\right.}{2n}$$

Mathematica [C] time = 0.36, size = 132, normalized size = 0.71

$$-\frac{bcx^n\left(d+e\log\left(fx^m\right)\right){}_3F_2\left(\frac{1}{2},\frac{1}{2},1;\frac{3}{2},\frac{3}{2};-c^2x^{2n}\right)}{n}+\frac{bcemx^n\,{}_4F_3\left(\frac{1}{2},\frac{1}{2},\frac{1}{2},1;\frac{3}{2},\frac{3}{2},\frac{3}{2};-c^2x^{2n}\right)}{n^2}-\frac{1}{2}\log(x)\left(em\log(x\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*ArcCot[c*x^n])*(d + e*Log[f*x^m]))/x,x]
```

```
[Out] (b*c*e*m*x^n*HypergeometricPFQ[{1/2, 1/2, 1/2, 1}, {3/2, 3/2, 3/2}, -(c^2*x
^(2*n))])/n^2 - (b*c*x^n*HypergeometricPFQ[{1/2, 1/2, 1}, {3/2, 3/2}, -(c^2
*x^(2*n))]*(d + e*Log[f*x^m]))/n - ((a + b*ArcCot[c*x^n] + b*ArcTan[c*x^n])
*Log[x]*(e*m*Log[x] - 2*(d + e*Log[f*x^m])))/2
```

fricas [C] time = 0.82, size = 246, normalized size = 1.32

$$\frac{2\,aemn^2\log(x)^2 - 2i\,bem\text{polylog}\left(3, i\,cx^n\right) + 2i\,bem\text{polylog}\left(3, -i\,cx^n\right) + 2\left(bemn^2\log(x)^2 + 2\left(ben^2\log(f) + bd\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arccot(c*x^n))*(d+e*log(f*x^m))/x,x, algorithm="fricas")
```

```
[Out] 1/4*(2*a*e*m*n^2*log(x)^2 - 2*I*b*e*m*polylog(3, I*c*x^n) + 2*I*b*e*m*polyl
og(3, -I*c*x^n) + 2*(b*e*m*n^2*log(x)^2 + 2*(b*e*n^2*log(f) + b*d*n^2)*log(
x))*arccot(c*x^n) + (2*I*b*e*m*n*log(x) + 2*I*b*e*n*log(f) + 2*I*b*d*n)*dil
og(I*c*x^n) + (-2*I*b*e*m*n*log(x) - 2*I*b*e*n*log(f) - 2*I*b*d*n)*dilog(-I
*c*x^n) + (-I*b*e*m*n^2*log(x)^2 + (-2*I*b*e*n^2*log(f) - 2*I*b*d*n^2)*log(
x))*log(I*c*x^n + 1) + (I*b*e*m*n^2*log(x)^2 + (2*I*b*e*n^2*log(f) + 2*I*b*
d*n^2)*log(x))*log(-I*c*x^n + 1) + 4*(a*e*n^2*log(f) + a*d*n^2)*log(x))/n^2
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b\,\text{arccot}\left(cx^n\right) + a\right)\left(e\log\left(fx^m\right) + d\right)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arccot(c*x^n))*(d+e*log(f*x^m))/x,x, algorithm="giac")
```

```
[Out] integrate((b*arccot(c*x^n) + a)*(e*log(f*x^m) + d)/x, x)
```

maple [C] time = 0.57, size = 1058, normalized size = 5.66

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a+b*arccot(c*x^n))*(d+e*ln(f*x^m))/x,x)
```

```
[Out] -1/2*I*e*b/n*dilog(-I*(c*x^n+I))*m*ln(x)-1/2*I*e*b/n*ln(-I*(-c*x^n+I))*ln(-
I*c*x^n)*m*ln(x)+1/n*ln(x^n)*a*d+1/2*e*a/m*ln(x^m)^2+1/4*I/n*ln(x^n)*Pi^2*b
*e*csgn(I*f*x^m)^2*csgn(I*f)+1/2*I/n*ln(x^n)*Pi*a*e*csgn(I*f*x^m)^2*csgn(I*
f)-1/4/n*dilog(1+I*c*x^n)*Pi*b*e*csgn(I*x^m)*csgn(I*f*x^m)*csgn(I*f)-1/2*I*
e*b*ln(-I*(c*x^n+I))*ln(x)^2*m+1/2*I/n*ln(x^n)*Pi*a*e*csgn(I*x^m)*csgn(I*f*
x^m)^2+1/4/n*dilog(1-I*c*x^n)*Pi*b*e*csgn(I*x^m)*csgn(I*f*x^m)*csgn(I*f)-1/
2*I*e*b/n*m*ln(x)*polylog(2,-I*c*x^n)+1/4/n*dilog(1+I*c*x^n)*Pi*b*e*csgn(I*
f*x^m)^2*csgn(I*f)+1/2*I*e*b/n*ln(-I*(-c*x^n+I))*ln(-I*c*x^n)*ln(x^m)-1/2*I
*e*b/n*dilog(-I*c*x^n)*m*ln(x)+1/2*I*e*b/n*m*ln(x)*polylog(2,I*c*x^n)+1/2*I
*e*b*ln(1-I*c*x^n)*ln(x)^2*m+1/4*e/m*ln(x^m)^2*b*Pi+1/2/n*ln(x^n)*Pi*b*d-1/
2*I/n*dilog(1+I*c*x^n)*b*d-1/4/n*dilog(1-I*c*x^n)*Pi*b*e*csgn(I*f*x^m)^2*cs
gn(I*f)+1/4/n*dilog(1+I*c*x^n)*Pi*b*e*csgn(I*x^m)*csgn(I*f*x^m)^2-1/4/n*dil
og(1-I*c*x^n)*Pi*b*e*csgn(I*x^m)*csgn(I*f*x^m)^2-1/4*I/n*ln(x^n)*Pi^2*b*e*c
sgn(I*f*x^m)^3-1/2*I/n*dilog(1+I*c*x^n)*ln(f)*b*e-1/2*I*e*b*ln(1+I*c*x^n)*l
n(x)^2*m-1/2*I/n*ln(x^n)*Pi*a*e*csgn(I*f*x^m)^3+1/n*ln(x^n)*ln(f)*a*e+1/2*I
/n*dilog(1-I*c*x^n)*b*d+1/2/n*ln(x^n)*Pi*ln(f)*b*e+1/2*I*e*b*ln(1+I*c*x^n)*
ln(x^m)*ln(x)+1/2*I*e*b/n*dilog(-I*(c*x^n+I))*ln(x^m)-1/4*I/n*ln(x^n)*Pi^2*
b*e*csgn(I*x^m)*csgn(I*f*x^m)*csgn(I*f)-1/2*I/n*ln(x^n)*Pi*a*e*csgn(I*x^m)*
csgn(I*f*x^m)*csgn(I*f)-1/4/n*dilog(1+I*c*x^n)*Pi*b*e*csgn(I*f*x^m)^3+1/4/n
*dilog(1-I*c*x^n)*Pi*b*e*csgn(I*f*x^m)^3+1/2*I*e*b*ln(-I*(c*x^n+I))*ln(x^m)
*ln(x)+1/2*I/n*dilog(1-I*c*x^n)*ln(f)*b*e+1/2*I*e*b/n^2*m*polylog(3,-I*c*x^
n)+1/2*I*e*b*ln(-I*(-c*x^n+I))*ln(x)^2*m-1/2*I*e*b*ln(-I*(-c*x^n+I))*ln(x^m
)*ln(x)+1/2*I*e*b/n*dilog(-I*c*x^n)*ln(x^m)+1/4*I/n*ln(x^n)*Pi^2*b*e*csgn(I
*x^m)*csgn(I*f*x^m)^2-1/2*I*e*b*ln(1-I*c*x^n)*ln(x^m)*ln(x)-1/2*I*e*b/n^2*m
*polylog(3,I*c*x^n)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{ae\log\left(fx^m\right)^2}{2\,m}+ad\log(x)-\frac{1}{2}\left(bem\log(x)^2-2\,be\log(x)\log\left(x^m\right)-2\left(be\log(f)+bd\right)\log(x)\right)\arctan\left(\frac{1}{cx^n}\right)+\int$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*arccot(c*x^n))*(d+e*log(f*x^m))/x,x, algorithm="maxima")
```

```
[Out] 1/2*a*e*log(f*x^m)^2/m + a*d*log(x) - 1/2*(b*e*m*log(x)^2 - 2*b*e*log(x)*lo
g(x^m) - 2*(b*e*log(f) + b*d)*log(x))*arctan(1/(c*x^n)) + integrate(-1/2*(b
*c*e*m*n*x^n*log(x)^2 - 2*b*c*e*n*x^n*log(x)*log(x^m) - 2*(b*c*e*log(f) + b
*c*d)*n*x^n*log(x))/(c^2*x*x^(2*n) + x), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\left(a+b\,\mathrm{acot}\left(c\,x^n\right)\right)\,\left(d+e\,\ln\left(f\,x^m\right)\right)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*acot(c*x^n))*(d + e*log(f*x^m)))/x,x)
```

```
[Out] int(((a + b*acot(c*x^n))*(d + e*log(f*x^m)))/x, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a+b*acot(c*x**n))*(d+e*ln(f*x**m))/x,x)
```

```
[Out] Timed out
```

3.218 $\int \cot^{-1}(e^x)\,dx$

Optimal. Leaf size=35

$$\frac{1}{2}i\text{Li}_2\left(ie^{-x}\right)-\frac{1}{2}i\text{Li}_2\left(-ie^{-x}\right)$$

```
[Out] -1/2*I*polylog(2,-I/exp(x))+1/2*I*polylog(2,I/exp(x))
```

Rubi [A] time = 0.03, antiderivative size = 35, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 4, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.750, Rules used = {2282, 4849, 2391}

$$\frac{1}{2}i\text{PolyLog}\left(2,ie^{-x}\right)-\frac{1}{2}i\text{PolyLog}\left(2,-ie^{-x}\right)$$

Antiderivative was successfully verified.

```
[In] Int[ArcCot[E^x],x]
```

```
[Out] (-I/2)*PolyLog[2, (-I)/E^x] + (I/2)*PolyLog[2, I/E^x]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 4849

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))/(x_), x_Symbol] :> Simp[a*Log[x], x]
 + (Dist[(I*b)/2, Int[Log[1 - I/(c*x)]/x, x], x] - Dist[(I*b)/2, Int[Log[1
+ I/(c*x)]/x, x], x]) /; FreeQ[{a, b, c}, x]
```

Rubi steps

$$\begin{aligned}\int \cot^{-1}\left(e^x\right)\,dx &= \text{Subst}\left(\int \frac{\cot^{-1}(x)}{x}\,dx,x,e^x\right)\\ &= \frac{1}{2}i\,\text{Subst}\left(\int \frac{\log\left(1-\frac{i}{x}\right)}{x}\,dx,x,e^x\right)-\frac{1}{2}i\,\text{Subst}\left(\int \frac{\log\left(1+\frac{i}{x}\right)}{x}\,dx,x,e^x\right)\\ &= -\frac{1}{2}i\text{Li}_2\left(-ie^{-x}\right)+\frac{1}{2}i\text{Li}_2\left(ie^{-x}\right)\end{aligned}$$

Mathematica [A] time = 0.08, size = 59, normalized size = 1.69

$$x\cot^{-1}\left(e^x\right)+\frac{1}{2}i\left(-\text{Li}_2\left(-ie^x\right)+\text{Li}_2\left(ie^x\right)+x\left(\log\left(1-ie^x\right)-\log\left(1+ie^x\right)\right)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcCot[E^x],x]
```

```
[Out] x*ArcCot[E^x] + (I/2)*(x*(Log[1 - I*E^x] - Log[1 + I*E^x]) - PolyLog[2, (-I
)*E^x] + PolyLog[2, I*E^x])
```

fricas [B] time = 0.49, size = 40, normalized size = 1.14

$$x \operatorname{arccot}(e^x) - \frac{1}{2} i x \log(i e^x + 1) + \frac{1}{2} i x \log(-i e^x + 1) + \frac{1}{2} i \operatorname{Li}_2(i e^x) - \frac{1}{2} i \operatorname{Li}_2(-i e^x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(exp(x)),x, algorithm="fricas")
```

```
[Out] x*arccot(e^x) - 1/2*I*x*log(I*e^x + 1) + 1/2*I*x*log(-I*e^x + 1) + 1/2*I*di
log(I*e^x) - 1/2*I*dilog(-I*e^x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \operatorname{arccot}(e^x) \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(exp(x)),x, algorithm="giac")
```

```
[Out] integrate(arccot(e^x), x)
```

maple [B] time = 0.06, size = 59, normalized size = 1.69

$$\ln(e^x) \operatorname{arccot}(e^x) - \frac{i \ln(e^x) \ln(1 + ie^x)}{2} + \frac{i \ln(e^x) \ln(1 - ie^x)}{2} - \frac{i \operatorname{dilog}(1 + ie^x)}{2} + \frac{i \operatorname{dilog}(1 - ie^x)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arccot(exp(x)),x)
```

```
[Out] ln(exp(x))*arccot(exp(x))-1/2*I*ln(exp(x))*ln(1+I*exp(x))+1/2*I*ln(exp(x))*
ln(1-I*exp(x))-1/2*I*dilog(1+I*exp(x))+1/2*I*dilog(1-I*exp(x))
```

maxima [A] time = 0.45, size = 34, normalized size = 0.97

$$x \operatorname{arccot}(e^x) + \frac{1}{4} \pi \log\left(e^{(2x)} + 1\right) + \frac{1}{2} i \operatorname{Li}_2(i e^x + 1) - \frac{1}{2} i \operatorname{Li}_2(-i e^x + 1)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(exp(x)),x, algorithm="maxima")
```

```
[Out] x*arccot(e^x) + 1/4*pi*log(e^(2*x) + 1) + 1/2*I*dilog(I*e^x + 1) - 1/2*I*di
log(-I*e^x + 1)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.03

$$\int \operatorname{acot}(e^x) \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(acot(exp(x)),x)
```

```
[Out] int(acot(exp(x)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \operatorname{acot}(e^x)\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(acot(exp(x)),x)
```

```
[Out] Integral(acot(exp(x)), x)
```

3.219 $\int x \cot^{-1}(e^x)\,dx$

Optimal. Leaf size=71

$$-\frac{1}{2}ix\text{Li}_2\left(-ie^{-x}\right)+\frac{1}{2}ix\text{Li}_2\left(ie^{-x}\right)-\frac{1}{2}i\text{Li}_3\left(-ie^{-x}\right)+\frac{1}{2}i\text{Li}_3\left(ie^{-x}\right)$$

```
[Out] -1/2*I*x*polylog(2,-I/exp(x))+1/2*I*x*polylog(2,I/exp(x))-1/2*I*polylog(3,-
I/exp(x))+1/2*I*polylog(3,I/exp(x))
```

Rubi [A] time = 0.05, antiderivative size = 71, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 4, integrand size = 6, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.667, Rules used = {5144, 2531, 2282, 6589}

$$-\frac{1}{2}ix\text{PolyLog}\left(2,-ie^{-x}\right)+\frac{1}{2}ix\text{PolyLog}\left(2,ie^{-x}\right)-\frac{1}{2}i\text{PolyLog}\left(3,-ie^{-x}\right)+\frac{1}{2}i\text{PolyLog}\left(3,ie^{-x}\right)$$

Antiderivative was successfully verified.

```
[In] Int[x*ArcCot[E^x],x]
```

```
[Out] (-I/2)*x*PolyLog[2, (-I)/E^x] + (I/2)*x*PolyLog[2, I/E^x] - (I/2)*PolyLog[3
, (-I)/E^x] + (I/2)*PolyLog[3, I/E^x]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] && !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] && !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 5144

```
Int[ArcCot[(a_.) + (b_.)*(f_)^((c_.) + (d_.)*(x_))]*(x_)^(m_.), x_Symbol] :
> Dist[I/2, Int[x^m*Log[1 - I/(a + b*f^(c + d*x))], x], x] - Dist[I/2, Int[
x^m*Log[1 + I/(a + b*f^(c + d*x))], x], x] /; FreeQ[{a, b, c, d, f}, x] &&
IntegerQ[m] && m > 0
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\int x\cot^{-1}(e^x)\,dx = \frac{1}{2}i\int x\log(1-ie^{-x})\,dx - \frac{1}{2}i\int x\log(1+ie^{-x})\,dx$$
$$= -\frac{1}{2}ix\text{Li}_2(-ie^{-x}) + \frac{1}{2}ix\text{Li}_2(ie^{-x}) + \frac{1}{2}i\int \text{Li}_2(-ie^{-x})\,dx - \frac{1}{2}i\int \text{Li}_2(ie^{-x})\,dx$$
$$= -\frac{1}{2}ix\text{Li}_2(-ie^{-x}) + \frac{1}{2}ix\text{Li}_2(ie^{-x}) - \frac{1}{2}i\,\text{Subst}\left(\int \frac{\text{Li}_2(-ix)}{x}\,dx, x, e^{-x}\right) + \frac{1}{2}i\,\text{Subst}\left(\int \frac{\text{Li}_2(ix)}{x}\right.$$
$$= -\frac{1}{2}ix\text{Li}_2(-ie^{-x}) + \frac{1}{2}ix\text{Li}_2(ie^{-x}) - \frac{1}{2}i\text{Li}_3(-ie^{-x}) + \frac{1}{2}i\text{Li}_3(ie^{-x})$$

Mathematica [A] time = 0.01, size = 58, normalized size = 0.82

$$-\frac{1}{2}i\left(x\text{Li}_2(-ie^{-x}) - x\text{Li}_2(ie^{-x}) + \text{Li}_3(-ie^{-x}) - \text{Li}_3(ie^{-x})\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[x*ArcCot[E^x],x]
```

```
[Out] (-1/2*I)*(x*PolyLog[2, (-I)/E^x] - x*PolyLog[2, I/E^x] + PolyLog[3, (-I)/E^
x] - PolyLog[3, I/E^x])
```

fricas [C] time = 0.67, size = 65, normalized size = 0.92

$$\frac{1}{2}x^2\,\text{arccot}(e^x) - \frac{1}{4}i\,x^2\log(i\,e^x+1) + \frac{1}{4}i\,x^2\log(-i\,e^x+1) + \frac{1}{2}i\,x\text{Li}_2(i\,e^x) - \frac{1}{2}i\,x\text{Li}_2(-i\,e^x) - \frac{1}{2}i\,\text{polylog}(3, i\,e^x) + \frac{1}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*arccot(exp(x)),x, algorithm="fricas")
```

```
[Out] 1/2*x^2*arccot(e^x) - 1/4*I*x^2*log(I*e^x + 1) + 1/4*I*x^2*log(-I*e^x + 1)
+ 1/2*I*x*dilog(I*e^x) - 1/2*I*x*dilog(-I*e^x) - 1/2*I*polylog(3, I*e^x) +
1/2*I*polylog(3, -I*e^x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x\,\text{arccot}(e^x)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*arccot(exp(x)),x, algorithm="giac")
```

```
[Out] integrate(x*arccot(e^x), x)
```

maple [A] time = 0.27, size = 50, normalized size = 0.70

$$\frac{\pi x^2}{4} + \frac{i\,\text{polylog}(2, ie^x)\,x}{2} - \frac{i\,\text{polylog}(3, ie^x)}{2} - \frac{i\,\text{polylog}(2, -ie^x)\,x}{2} + \frac{i\,\text{polylog}(3, -ie^x)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*arccot(exp(x)),x)
```

```
[Out] 1/4*Pi*x^2+1/2*I*polylog(2,I*exp(x))*x-1/2*I*polylog(3,I*exp(x))-1/2*I*poly
log(2,-I*exp(x))*x+1/2*I*polylog(3,-I*exp(x))
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{2}x^2\arctan\left(e^{(-x)}\right) + \int \frac{x^2e^x}{2\left(e^{(2x)}+1\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*arccot(exp(x)),x, algorithm="maxima")
[Out] 1/2*x^2*arctan(e^(-x)) + integrate(1/2*x^2*e^x/(e^(2*x) + 1), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int x \operatorname{acot}(\mathrm{e}^x)\ dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*acot(exp(x)),x)
[Out] int(x*acot(exp(x)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x \operatorname{acot}(e^x)\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*acot(exp(x)),x)
[Out] Integral(x*acot(exp(x)), x)
```

3.220 $\int x^2 \cot^{-1}(e^x)\, dx$

Optimal. Leaf size=103

$$-\frac{1}{2}ix^2\text{Li}_2\left(-ie^{-x}\right)+\frac{1}{2}ix^2\text{Li}_2\left(ie^{-x}\right)-ix\text{Li}_3\left(-ie^{-x}\right)+ix\text{Li}_3\left(ie^{-x}\right)-i\text{Li}_4\left(-ie^{-x}\right)+i\text{Li}_4\left(ie^{-x}\right)$$

```
[Out] -1/2*I*x^2*polylog(2,-I/exp(x))+1/2*I*x^2*polylog(2,I/exp(x))-I*x*polylog(3
,-I/exp(x))+I*x*polylog(3,I/exp(x))-I*polylog(4,-I/exp(x))+I*polylog(4,I/ex
p(x))
```

Rubi [A] time = 0.07, antiderivative size = 103, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 5, integrand size = 8, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.625, Rules used = {5144, 2531, 6609, 2282, 6589}

$$-\frac{1}{2}ix^2\text{PolyLog}\left(2,-ie^{-x}\right)+\frac{1}{2}ix^2\text{PolyLog}\left(2,ie^{-x}\right)-ix\text{PolyLog}\left(3,-ie^{-x}\right)+ix\text{PolyLog}\left(3,ie^{-x}\right)-i\text{PolyLog}\left(4,-ie^{-x}\right)$$

Antiderivative was successfully verified.

```
[In] Int[x^2*ArcCot[E^x],x]
```

```
[Out] (-I/2)*x^2*PolyLog[2, (-I)/E^x] + (I/2)*x^2*PolyLog[2, I/E^x] - I*x*PolyLog
[3, (-I)/E^x] + I*x*PolyLog[3, I/E^x] - I*PolyLog[4, (-I)/E^x] + I*PolyLog[
4, I/E^x]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 5144

```
Int[ArcCot[(a_.) + (b_.)*(f_)^((c_.) + (d_.)*(x_))]*(x_)^(m_.), x_Symbol] :
> Dist[I/2, Int[x^m*Log[1 - I/(a + b*f^(c + d*x))], x], x] - Dist[I/2, Int[
x^m*Log[1 + I/(a + b*f^(c + d*x))], x], x] /; FreeQ[{a, b, c, d, f}, x] &&
IntegerQ[m] && m > 0
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6609

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[((e + f*x)^m*PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p])/(b*c*p*Log[F]), x] - Dist[(f*m)/(b*c*p*Log[F]), Int[(e + f*x)^
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
```

```
d, e, f, n, p}, x] && GtQ[m, 0]
```

Rubi steps

$$\begin{aligned}\int x^2 \cot^{-1}(e^x)\,dx &= \frac{1}{2}i\int x^2\log(1-ie^{-x})\,dx-\frac{1}{2}i\int x^2\log(1+ie^{-x})\,dx\\ &= -\frac{1}{2}ix^2\text{Li}_2(-ie^{-x})+\frac{1}{2}ix^2\text{Li}_2(ie^{-x})+i\int x\text{Li}_2(-ie^{-x})\,dx-i\int x\text{Li}_2(ie^{-x})\,dx\\ &= -\frac{1}{2}ix^2\text{Li}_2(-ie^{-x})+\frac{1}{2}ix^2\text{Li}_2(ie^{-x})-ix\text{Li}_3(-ie^{-x})+ix\text{Li}_3(ie^{-x})+i\int \text{Li}_3(-ie^{-x})\,dx-i\int \text{L}\\ &= -\frac{1}{2}ix^2\text{Li}_2(-ie^{-x})+\frac{1}{2}ix^2\text{Li}_2(ie^{-x})-ix\text{Li}_3(-ie^{-x})+ix\text{Li}_3(ie^{-x})-i\,\text{Subst}\left(\int\frac{\text{Li}_3(-ix)}{x}\,dx,x,\right.\\ &= -\frac{1}{2}ix^2\text{Li}_2(-ie^{-x})+\frac{1}{2}ix^2\text{Li}_2(ie^{-x})-ix\text{Li}_3(-ie^{-x})+ix\text{Li}_3(ie^{-x})-i\text{Li}_4(-ie^{-x})+i\text{Li}_4(ie^{-x})\end{aligned}$$

Mathematica [A] time = 0.01, size = 103, normalized size = 1.00

$$-\frac{1}{2}ix^2\text{Li}_2(-ie^{-x})+\frac{1}{2}ix^2\text{Li}_2(ie^{-x})-ix\text{Li}_3(-ie^{-x})+ix\text{Li}_3(ie^{-x})-i\text{Li}_4(-ie^{-x})+i\text{Li}_4(ie^{-x})$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*ArcCot[E^x],x]
```

```
[Out] (-1/2*I)*x^2*PolyLog[2, (-I)/E^x] + (I/2)*x^2*PolyLog[2, I/E^x] - I*x*PolyL
og[3, (-I)/E^x] + I*x*PolyLog[3, I/E^x] - I*PolyLog[4, (-I)/E^x] + I*PolyLo
g[4, I/E^x]
```

fricas [C] time = 0.58, size = 87, normalized size = 0.84

$$\frac{1}{3}x^3\operatorname{arccot}(e^x)-\frac{1}{6}i\,x^3\log(i\,e^x+1)+\frac{1}{6}i\,x^3\log(-i\,e^x+1)+\frac{1}{2}i\,x^2\text{Li}_2(i\,e^x)-\frac{1}{2}i\,x^2\text{Li}_2(-i\,e^x)-i\,x\text{polylog}(3,i\,e^x)+i\,x\text{p}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*arccot(exp(x)),x, algorithm="fricas")
```

```
[Out] 1/3*x^3*arccot(e^x) - 1/6*I*x^3*log(I*e^x + 1) + 1/6*I*x^3*log(-I*e^x + 1)
+ 1/2*I*x^2*dilog(I*e^x) - 1/2*I*x^2*dilog(-I*e^x) - I*x*polylog(3, I*e^x)
+ I*x*polylog(3, -I*e^x) + I*polylog(4, I*e^x) - I*polylog(4, -I*e^x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^2\operatorname{arccot}(e^x)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*arccot(exp(x)),x, algorithm="giac")
```

```
[Out] integrate(x^2*arccot(e^x), x)
```

maple [A] time = 0.24, size = 76, normalized size = 0.74

$$\frac{\pi x^3}{6}+\frac{i\,\text{polylog}(2,ie^x)\,x^2}{2}-ix\,\text{polylog}(3,ie^x)+i\,\text{polylog}(4,ie^x)-\frac{i\,\text{polylog}(2,-ie^x)\,x^2}{2}+i\,\text{polylog}(3,-ie^x)\,x-i\,\text{p}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*arccot(exp(x)),x)
```

```
[Out] 1/6*Pi*x^3+1/2*I*polylog(2,I*exp(x))*x^2-I*x*polylog(3,I*exp(x))+I*polylog(
4,I*exp(x))-1/2*I*polylog(2,-I*exp(x))*x^2+I*polylog(3,-I*exp(x))*x-I*polyl
og(4,-I*exp(x))
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{3}\,x^3 \arctan\left(e^{(-x)}\right) + \int \frac{x^3 e^x}{3\left(e^{(2\,x)} + 1\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*arccot(exp(x)),x, algorithm="maxima")
```

```
[Out] 1/3*x^3*arctan(e^(-x)) + integrate(1/3*x^3*e^x/(e^(2*x) + 1), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int x^2 \operatorname{acot}\left(\mathrm{e}^x\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*acot(exp(x)),x)
```

```
[Out] int(x^2*acot(exp(x)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^2 \operatorname{acot}\left(e^x\right) dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*acot(exp(x)),x)
```

```
[Out] Integral(x**2*acot(exp(x)), x)
```

3.221 $\int \cot^{-1}\left(e^{a+bx}\right) dx$

Optimal. Leaf size=51

$$\frac{i\text{Li}_2\left(ie^{-a-bx}\right)}{2b}-\frac{i\text{Li}_2\left(-ie^{-a-bx}\right)}{2b}$$

```
[Out] -1/2*I*polylog(2,-I*exp(-b*x-a))/b+1/2*I*polylog(2,I*exp(-b*x-a))/b
```

Rubi [A] time = 0.03, antiderivative size = 51, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 8, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.375, Rules used = {2282, 4849, 2391}

$$\frac{i\text{PolyLog}\left(2,ie^{-a-bx}\right)}{2b}-\frac{i\text{PolyLog}\left(2,-ie^{-a-bx}\right)}{2b}$$

Antiderivative was successfully verified.

```
[In] Int[ArcCot[E^(a + b*x)],x]
```

```
[Out] ((-I/2)*PolyLog[2, (-I)*E^(-a - b*x)])/b + ((I/2)*PolyLog[2, I*E^(-a - b*x)
])/b
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] && !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] && !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2391

```
Int[Log[(c_.)*((d_) + (e_.)*(x_)^(n_.))]/(x_), x_Symbol] :> -Simp[PolyLog[2
, -(c*e*x^n)]/n, x] /; FreeQ[{c, d, e, n}, x] && EqQ[c*d, 1]
```

Rule 4849

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))/(x_), x_Symbol] :> Simp[a*Log[x], x]
 + (Dist[(I*b)/2, Int[Log[1 - I/(c*x)]/x, x], x] - Dist[(I*b)/2, Int[Log[1
+ I/(c*x)]/x, x], x]) /; FreeQ[{a, b, c}, x]
```

Rubi steps

$$\begin{aligned}\int \cot^{-1}\left(e^{a+bx}\right) dx &= \frac{\text{Subst}\left(\int \frac{\cot^{-1}(x)}{x}\,dx, x, e^{a+bx}\right)}{b}\\ &= \frac{i\,\text{Subst}\left(\int \frac{\log\left(1-\frac{i}{x}\right)}{x}\,dx, x, e^{a+bx}\right)}{2b}-\frac{i\,\text{Subst}\left(\int \frac{\log\left(1+\frac{i}{x}\right)}{x}\,dx, x, e^{a+bx}\right)}{2b}\\ &= -\frac{i\text{Li}_2\left(-ie^{-a-bx}\right)}{2b}+\frac{i\text{Li}_2\left(ie^{-a-bx}\right)}{2b}\end{aligned}$$

Mathematica [A] time = 0.18, size = 83, normalized size = 1.63

$$x\cot^{-1}\left(e^{a+bx}\right)+\frac{i\left(-\text{Li}_2\left(-ie^{a+bx}\right)+\text{Li}_2\left(ie^{a+bx}\right)+bx\left(\log\left(1-ie^{a+bx}\right)-\log\left(1+ie^{a+bx}\right)\right)\right)}{2b}$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcCot[E^(a + b*x)],x]
```

```
[Out] x*ArcCot[E^(a + b*x)] + ((I/2)*(b*x*(Log[1 - I*E^(a + b*x)] - Log[1 + I*E^(
a + b*x)]) - PolyLog[2, (-I)*E^(a + b*x)] + PolyLog[2, I*E^(a + b*x)]))/b
```

fricas [B] time = 0.75, size = 103, normalized size = 2.02

$$\frac{2\,bx\,\operatorname{arccot}\left(e^{(bx+a)}\right) - i\,a\log\left(e^{(bx+a)} + i\right) + i\,a\log\left(e^{(bx+a)} - i\right) + (-i\,bx - i\,a)\log\left(i\,e^{(bx+a)} + 1\right) + (i\,bx + i\,a)\log}{2\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(exp(b*x+a)),x, algorithm="fricas")
```

```
[Out] 1/2*(2*b*x*arccot(e^(b*x + a)) - I*a*log(e^(b*x + a) + I) + I*a*log(e^(b*x
+ a) - I) + (-I*b*x - I*a)*log(I*e^(b*x + a) + 1) + (I*b*x + I*a)*log(-I*e^
(b*x + a) + 1) + I*dilog(I*e^(b*x + a)) - I*dilog(-I*e^(b*x + a)))/b
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \operatorname{arccot}\left(e^{(bx+a)}\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(exp(b*x+a)),x, algorithm="giac")
```

```
[Out] integrate(arccot(e^(b*x + a)), x)
```

maple [B] time = 0.06, size = 106, normalized size = 2.08

$$\frac{\ln\left(e^{bx+a}\right)\operatorname{arccot}\left(e^{bx+a}\right)}{b} - \frac{i\ln\left(e^{bx+a}\right)\ln\left(1+ie^{bx+a}\right)}{2b} + \frac{i\ln\left(e^{bx+a}\right)\ln\left(1-ie^{bx+a}\right)}{2b} - \frac{i\operatorname{dilog}\left(1+ie^{bx+a}\right)}{2b} + \frac{i\operatorname{dilog}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arccot(exp(b*x+a)),x)
```

```
[Out] 1/b*ln(exp(b*x+a))*arccot(exp(b*x+a))-1/2*I/b*ln(exp(b*x+a))*ln(1+I*exp(b*x
+a))+1/2*I/b*ln(exp(b*x+a))*ln(1-I*exp(b*x+a))-1/2*I/b*dilog(1+I*exp(b*x+a)
)+1/2*I/b*dilog(1-I*exp(b*x+a))
```

maxima [A] time = 0.46, size = 63, normalized size = 1.24

$$\frac{(bx+a)\operatorname{arccot}\left(e^{(bx+a)}\right)}{b} + \frac{\pi\log\left(e^{(2\,bx+2\,a)}+1\right) + 2i\operatorname{Li}_2\left(i\,e^{(bx+a)}+1\right) - 2i\operatorname{Li}_2\left(-i\,e^{(bx+a)}+1\right)}{4\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(exp(b*x+a)),x, algorithm="maxima")
```

```
[Out] (b*x + a)*arccot(e^(b*x + a))/b + 1/4*(pi*log(e^(2*b*x + 2*a) + 1) + 2*I*di
log(I*e^(b*x + a) + 1) - 2*I*dilog(-I*e^(b*x + a) + 1))/b
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \operatorname{acot}\left(e^{a+b\,x}\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(acot(exp(a + b*x)),x)
```

```
[Out] int(acot(exp(a + b*x)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \operatorname{acot}\left(e^{a+bx}\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(acot(exp(b*x+a)),x)
```

```
[Out] Integral(acot(exp(a + b*x)), x)
```

3.222 $\int x \cot^{-1}\left(e^{a+bx}\right) dx$

Optimal. Leaf size=103

$$-\frac{i\text{Li}_3\left(-ie^{-a-bx}\right)}{2b^2}+\frac{i\text{Li}_3\left(ie^{-a-bx}\right)}{2b^2}-\frac{ix\text{Li}_2\left(-ie^{-a-bx}\right)}{2b}+\frac{ix\text{Li}_2\left(ie^{-a-bx}\right)}{2b}$$

```
[Out] -1/2*I*x*polylog(2,-I*exp(-b*x-a))/b+1/2*I*x*polylog(2,I*exp(-b*x-a))/b-1/2
*I*polylog(3,-I*exp(-b*x-a))/b^2+1/2*I*polylog(3,I*exp(-b*x-a))/b^2
```

Rubi [A] time = 0.06, antiderivative size = 103, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 4, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.400, Rules used = {5144, 2531, 2282, 6589}

$$-\frac{i\text{PolyLog}\left(3,-ie^{-a-bx}\right)}{2b^2}+\frac{i\text{PolyLog}\left(3,ie^{-a-bx}\right)}{2b^2}-\frac{ix\text{PolyLog}\left(2,-ie^{-a-bx}\right)}{2b}+\frac{ix\text{PolyLog}\left(2,ie^{-a-bx}\right)}{2b}$$

Antiderivative was successfully verified.

```
[In] Int[x*ArcCot[E^(a + b*x)],x]
```

```
[Out] ((-I/2)*x*PolyLog[2, (-I)*E^(-a - b*x)])/b + ((I/2)*x*PolyLog[2, I*E^(-a -
b*x)])/b - ((I/2)*PolyLog[3, (-I)*E^(-a - b*x)])/b^2 + ((I/2)*PolyLog[3, I*
E^(-a - b*x)])/b^2
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 5144

```
Int[ArcCot[(a_.) + (b_.)*(f_)^((c_.) + (d_.)*(x_))]*(x_)^(m_.), x_Symbol] :
> Dist[I/2, Int[x^m*Log[1 - I/(a + b*f^(c + d*x))], x], x] - Dist[I/2, Int[
x^m*Log[1 + I/(a + b*f^(c + d*x))], x], x] /; FreeQ[{a, b, c, d, f}, x] &&
IntegerQ[m] && m > 0
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rubi steps

$$\begin{aligned}\int x\cot^{-1}\left(e^{a+bx}\right)dx &= \frac{1}{2}i\int x\log\left(1-ie^{-a-bx}\right)dx-\frac{1}{2}i\int x\log\left(1+ie^{-a-bx}\right)dx\\ &= -\frac{ix\mathrm{Li}_2\left(-ie^{-a-bx}\right)}{2b}+\frac{ix\mathrm{Li}_2\left(ie^{-a-bx}\right)}{2b}+\frac{i\int \mathrm{Li}_2\left(-ie^{-a-bx}\right)dx}{2b}-\frac{i\int \mathrm{Li}_2\left(ie^{-a-bx}\right)dx}{2b}\\ &= -\frac{ix\mathrm{Li}_2\left(-ie^{-a-bx}\right)}{2b}+\frac{ix\mathrm{Li}_2\left(ie^{-a-bx}\right)}{2b}-\frac{i\,\mathrm{Subst}\left(\int\frac{\mathrm{Li}_2(-ix)}{x}dx,x,e^{-a-bx}\right)}{2b^2}+\frac{i\,\mathrm{Subst}\left(\int\frac{\mathrm{Li}_2(ix)}{x}\right.}{2b^2}\\ &= -\frac{ix\mathrm{Li}_2\left(-ie^{-a-bx}\right)}{2b}+\frac{ix\mathrm{Li}_2\left(ie^{-a-bx}\right)}{2b}-\frac{i\mathrm{Li}_3\left(-ie^{-a-bx}\right)}{2b^2}+\frac{i\mathrm{Li}_3\left(ie^{-a-bx}\right)}{2b^2}\end{aligned}$$

Mathematica [A] time = 0.02, size = 83, normalized size = 0.81

$$-\frac{i\left(bx\mathrm{Li}_2\left(-ie^{-a-bx}\right)-bx\mathrm{Li}_2\left(ie^{-a-bx}\right)+\mathrm{Li}_3\left(-ie^{-a-bx}\right)-\mathrm{Li}_3\left(ie^{-a-bx}\right)\right)}{2b^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[x*ArcCot[E^(a + b*x)],x]
```

```
[Out] ((-1/2*I)*(b*x*PolyLog[2, (-I)*E^(-a - b*x)] - b*x*PolyLog[2, I*E^(-a - b*x
)] + PolyLog[3, (-I)*E^(-a - b*x)] - PolyLog[3, I*E^(-a - b*x)]))/b^2
```

fricas [C] time = 0.66, size = 151, normalized size = 1.47

$$\frac{2\,b^2x^2\,\mathrm{arccot}\left(e^{(bx+a)}\right)+2i\,bx\mathrm{Li}_2\left(i\,e^{(bx+a)}\right)-2i\,bx\mathrm{Li}_2\left(-i\,e^{(bx+a)}\right)+i\,a^2\log\left(e^{(bx+a)}+i\right)-i\,a^2\log\left(e^{(bx+a)}-i\right)+\left(-\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*arccot(exp(b*x+a)),x, algorithm="fricas")
```

```
[Out] 1/4*(2*b^2*x^2*arccot(e^(b*x + a)) + 2*I*b*x*dilog(I*e^(b*x + a)) - 2*I*b*x
*dilog(-I*e^(b*x + a)) + I*a^2*log(e^(b*x + a) + I) - I*a^2*log(e^(b*x + a)
 - I) + (-I*b^2*x^2 + I*a^2)*log(I*e^(b*x + a) + 1) + (I*b^2*x^2 - I*a^2)*l
og(-I*e^(b*x + a) + 1) - 2*I*polylog(3, I*e^(b*x + a)) + 2*I*polylog(3, -I*
e^(b*x + a)))/b^2
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x\,\mathrm{arccot}\left(e^{(bx+a)}\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*arccot(exp(b*x+a)),x, algorithm="giac")
```

```
[Out] integrate(x*arccot(e^(b*x + a)), x)
```

maple [B] time = 0.34, size = 355, normalized size = 3.45

$$\frac{\pi x^2}{4}+\frac{i\ln\left(-i\left(-\mathrm{e}^{bx+a}+i\right)\right)a^2}{2b^2}-\frac{i\,\mathrm{polylog}\left(3,i\mathrm{e}^{bx+a}\right)}{2b^2}-\frac{i\,\mathrm{dilog}\left(-i\mathrm{e}^{bx+a}\right)a}{2b^2}-\frac{i\ln\left(-i\left(\mathrm{e}^{bx+a}+i\right)\right)a^2}{2b^2}-\frac{i\ln\left(-i\left(\mathrm{e}^{bx+a}+\right.\right.}{2b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*arccot(exp(b*x+a)),x)
```

```
[Out] 1/4*Pi*x^2+1/2*I/b^2*ln(-I*(-exp(b*x+a)+I))*a^2-1/2*I/b^2*polylog(3,I*exp(b
*x+a))-1/2*I/b^2*dilog(-I*(exp(b*x+a)+I))*a-1/2*I/b^2*dilog(-I*exp(b*x+a))*
```

```
a+1/2*I/b^2*polylog(2,I*exp(b*x+a))*a-1/2*I/b^2*ln(-I*(exp(b*x+a)+I))*a^2-1
/2*I/b*ln(-I*(exp(b*x+a)+I))*x*a-1/2*I/b^2*a^2*ln(1+I*exp(b*x+a))-1/2*I/b*l
n(1+I*exp(b*x+a))*x*a+1/2*I/b*ln(1-I*exp(b*x+a))*x*a+1/2*I/b^2*a^2*ln(1-I*e
xp(b*x+a))-1/2*I/b*polylog(2,-I*exp(b*x+a))*x+1/2*I/b*polylog(2,I*exp(b*x+a
))*x-1/2*I/b^2*ln(-I*exp(b*x+a))*ln(-I*(-exp(b*x+a)+I))*a+1/2*I/b*ln(-I*(-e
xp(b*x+a)+I))*x*a-1/2*I/b^2*polylog(2,-I*exp(b*x+a))*a+1/2*I/b^2*polylog(3,
-I*exp(b*x+a))
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{2}\,x^2\arctan\left(e^{(-bx-a)}\right)+b\int\frac{x^2e^{(bx+a)}}{2\left(e^{(2\,bx+2\,a)}+1\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*arccot(exp(b*x+a)),x, algorithm="maxima")
```

```
[Out] 1/2*x^2*arctan(e^(-b*x - a)) + b*integrate(1/2*x^2*e^(b*x + a)/(e^(2*b*x +
2*a) + 1), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int x\,\mathrm{acot}\left(\mathrm{e}^{a+b\,x}\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*acot(exp(a + b*x)),x)
```

```
[Out] int(x*acot(exp(a + b*x)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x\,\mathrm{acot}\left(e^{a}e^{bx}\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*acot(exp(b*x+a)),x)
```

```
[Out] Integral(x*acot(exp(a)*exp(b*x)), x)
```

3.223 $\int x^2 \cot^{-1}\left(e^{a+bx}\right)\,dx$

Optimal. Leaf size=151

$$-\frac{i\text{Li}_4\left(-ie^{-a-bx}\right)}{b^3}+\frac{i\text{Li}_4\left(ie^{-a-bx}\right)}{b^3}-\frac{ix\text{Li}_3\left(-ie^{-a-bx}\right)}{b^2}+\frac{ix\text{Li}_3\left(ie^{-a-bx}\right)}{b^2}-\frac{ix^2\text{Li}_2\left(-ie^{-a-bx}\right)}{2b}+\frac{ix^2\text{Li}_2\left(ie^{-a-bx}\right)}{2b}$$

```
[Out] -1/2*I*x^2*polylog(2,-I*exp(-b*x-a))/b+1/2*I*x^2*polylog(2,I*exp(-b*x-a))/b
-I*x*polylog(3,-I*exp(-b*x-a))/b^2+I*x*polylog(3,I*exp(-b*x-a))/b^2-I*polyl
og(4,-I*exp(-b*x-a))/b^3+I*polylog(4,I*exp(-b*x-a))/b^3
```

Rubi [A] time = 0.10, antiderivative size = 151, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 5, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.417, Rules used = {5144, 2531, 6609, 2282, 6589}

$$-\frac{ix\text{PolyLog}\left(3,-ie^{-a-bx}\right)}{b^2}+\frac{ix\text{PolyLog}\left(3,ie^{-a-bx}\right)}{b^2}-\frac{i\text{PolyLog}\left(4,-ie^{-a-bx}\right)}{b^3}+\frac{i\text{PolyLog}\left(4,ie^{-a-bx}\right)}{b^3}-\frac{ix^2\text{PolyLog}\left(\right.}{2b}$$

Antiderivative was successfully verified.

```
[In] Int[x^2*ArcCot[E^(a + b*x)],x]
```

```
[Out] ((-I/2)*x^2*PolyLog[2, (-I)*E^(-a - b*x)])/b + ((I/2)*x^2*PolyLog[2, I*E^(-
a - b*x)])/b - (I*x*PolyLog[3, (-I)*E^(-a - b*x)])/b^2 + (I*x*PolyLog[3, I*
E^(-a - b*x)])/b^2 - (I*PolyLog[4, (-I)*E^(-a - b*x)])/b^3 + (I*PolyLog[4,
I*E^(-a - b*x)])/b^3
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] && !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] && !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 5144

```
Int[ArcCot[(a_.) + (b_.)*(f_)^((c_.) + (d_.)*(x_))]*(x_)^(m_.), x_Symbol] :
> Dist[I/2, Int[x^m*Log[1 - I/(a + b*f^(c + d*x))], x], x] - Dist[I/2, Int[
x^m*Log[1 + I/(a + b*f^(c + d*x))], x], x] /; FreeQ[{a, b, c, d, f}, x] &&
IntegerQ[m] && m > 0
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6609

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[((e + f*x)^m*PolyLog[n + 1, d*(F^(c*(a
```

```
+ b*x)))^p])/(b*c*p*Log[F]), x] - Dist[(f*m)/(b*c*p*Log[F]), Int[(e + f*x)^
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
 d, e, f, n, p}, x] && GtQ[m, 0]
```

Rubi steps

$$\int x^2 \cot^{-1}\left(e^{a+bx}\right) dx = \frac{1}{2} i \int x^2 \log\left(1 - ie^{-a-bx}\right) dx - \frac{1}{2} i \int x^2 \log\left(1 + ie^{-a-bx}\right) dx$$

$$= -\frac{ix^2 \text{Li}_2\left(-ie^{-a-bx}\right)}{2b} + \frac{ix^2 \text{Li}_2\left(ie^{-a-bx}\right)}{2b} + \frac{i \int x \text{Li}_2\left(-ie^{-a-bx}\right) dx}{b} - \frac{i \int x \text{Li}_2\left(ie^{-a-bx}\right) dx}{b}$$

$$= -\frac{ix^2 \text{Li}_2\left(-ie^{-a-bx}\right)}{2b} + \frac{ix^2 \text{Li}_2\left(ie^{-a-bx}\right)}{2b} - \frac{ix \text{Li}_3\left(-ie^{-a-bx}\right)}{b^2} + \frac{ix \text{Li}_3\left(ie^{-a-bx}\right)}{b^2} + \frac{i \int \text{Li}_3 (\cdots}{}$$

$$= -\frac{ix^2 \text{Li}_2\left(-ie^{-a-bx}\right)}{2b} + \frac{ix^2 \text{Li}_2\left(ie^{-a-bx}\right)}{2b} - \frac{ix \text{Li}_3\left(-ie^{-a-bx}\right)}{b^2} + \frac{ix \text{Li}_3\left(ie^{-a-bx}\right)}{b^2} - \frac{i \,\text{Subst}\left(\cdots\right.}{}$$

$$= -\frac{ix^2 \text{Li}_2\left(-ie^{-a-bx}\right)}{2b} + \frac{ix^2 \text{Li}_2\left(ie^{-a-bx}\right)}{2b} - \frac{ix \text{Li}_3\left(-ie^{-a-bx}\right)}{b^2} + \frac{ix \text{Li}_3\left(ie^{-a-bx}\right)}{b^2} - \frac{i \text{Li}_4\left(-ie^{\cdots}\right.}{b^3}$$

Mathematica [A] time = 0.01, size = 151, normalized size = 1.00

$$-\frac{i \text{Li}_4\left(-ie^{-a-bx}\right)}{b^3} + \frac{i \text{Li}_4\left(ie^{-a-bx}\right)}{b^3} - \frac{ix \text{Li}_3\left(-ie^{-a-bx}\right)}{b^2} + \frac{ix \text{Li}_3\left(ie^{-a-bx}\right)}{b^2} - \frac{ix^2 \text{Li}_2\left(-ie^{-a-bx}\right)}{2b} + \frac{ix^2 \text{Li}_2\left(ie^{-a-bx}\right)}{2b}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*ArcCot[E^(a + b*x)],x]
```

```
[Out] ((-1/2*I)*x^2*PolyLog[2, (-I)*E^(-a - b*x)])/b + ((I/2)*x^2*PolyLog[2, I*E^
(-a - b*x)])/b - (I*x*PolyLog[3, (-I)*E^(-a - b*x)])/b^2 + (I*x*PolyLog[3,
I*E^(-a - b*x)])/b^2 - (I*PolyLog[4, (-I)*E^(-a - b*x)])/b^3 + (I*PolyLog[4
, I*E^(-a - b*x)])/b^3
```

fricas [C] time = 0.82, size = 187, normalized size = 1.24

$$\frac{2 b^3 x^3 \operatorname{arccot}\left(e^{(bx+a)}\right) + 3i b^2 x^2 \text{Li}_2\left(i e^{(bx+a)}\right) - 3i b^2 x^2 \text{Li}_2\left(-i e^{(bx+a)}\right) - i a^3 \log\left(e^{(bx+a)} + i\right) + i a^3 \log\left(e^{(bx+a)} - \cdots\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*arccot(exp(b*x+a)),x, algorithm="fricas")
```

```
[Out] 1/6*(2*b^3*x^3*arccot(e^(b*x + a)) + 3*I*b^2*x^2*dilog(I*e^(b*x + a)) - 3*I
*b^2*x^2*dilog(-I*e^(b*x + a)) - I*a^3*log(e^(b*x + a) + I) + I*a^3*log(e^(
b*x + a) - I) - 6*I*b*x*polylog(3, I*e^(b*x + a)) + 6*I*b*x*polylog(3, -I*e
^(b*x + a)) + (-I*b^3*x^3 - I*a^3)*log(I*e^(b*x + a) + 1) + (I*b^3*x^3 + I*
a^3)*log(-I*e^(b*x + a) + 1) + 6*I*polylog(4, I*e^(b*x + a)) - 6*I*polylog(
4, -I*e^(b*x + a)))/b^3
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^2 \operatorname{arccot}\left(e^{(bx+a)}\right) dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*arccot(exp(b*x+a)),x, algorithm="giac")
```

```
[Out] integrate(x^2*arccot(e^(b*x + a)), x)
```

maple [B] time = 0.34, size = 413, normalized size = 2.74

$$\frac{\pi x^3}{6}-\frac{i\ln\left(1-ie^{bx+a}\right)x a^2}{2b^2}-\frac{i\ln\left(-i\left(-e^{bx+a}+i\right)\right)a^3}{2b^3}-\frac{i\,\mathrm{polylog}\left(4,-ie^{bx+a}\right)}{b^3}+\frac{i\,\mathrm{dilog}\left(-ie^{bx+a}\right)a^2}{2b^3}-\frac{ia^3\ln\left(1-ie^{bx-}\right.}{2b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*arccot(exp(b*x+a)),x)
```

```
[Out] 1/6*Pi*x^3-1/2*I/b^2*ln(1-I*exp(b*x+a))*x*a^2-1/2*I/b^3*ln(-I*(-exp(b*x+a)+
I))*a^3+1/2*I/b*polylog(2,I*exp(b*x+a))*x^2+1/2*I/b^3*dilog(-I*(exp(b*x+a)+
I))*a^2-1/2*I/b^3*a^3*ln(1-I*exp(b*x+a))+1/2*I/b^3*ln(-I*(exp(b*x+a)+I))*a^
3+I/b^3*polylog(4,I*exp(b*x+a))+I/b^2*polylog(3,-I*exp(b*x+a))*x-I/b^3*poly
log(4,-I*exp(b*x+a))+1/2*I/b^3*dilog(-I*exp(b*x+a))*a^2-I/b^2*polylog(3,I*e
xp(b*x+a))*x+1/2*I/b^2*ln(-I*(exp(b*x+a)+I))*x*a^2+1/2*I/b^3*polylog(2,-I*e
xp(b*x+a))*a^2+1/2*I/b^3*ln(-I*exp(b*x+a))*ln(-I*(-exp(b*x+a)+I))*a^2+1/2*I
/b^2*ln(1+I*exp(b*x+a))*x*a^2-1/2*I/b^3*polylog(2,I*exp(b*x+a))*a^2-1/2*I/b
*polylog(2,-I*exp(b*x+a))*x^2+1/2*I/b^3*a^3*ln(1+I*exp(b*x+a))-1/2*I/b^2*ln
(-I*(-exp(b*x+a)+I))*x*a^2
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{1}{3}x^3\arctan\left(e^{(-bx-a)}\right)+b\int\frac{x^3e^{(bx+a)}}{3\left(e^{(2bx+2a)}+1\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*arccot(exp(b*x+a)),x, algorithm="maxima")
```

```
[Out] 1/3*x^3*arctan(e^(-b*x - a)) + b*integrate(1/3*x^3*e^(b*x + a)/(e^(2*b*x +
2*a) + 1), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int x^2\,\mathrm{acot}\left(e^{a+b\,x}\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*acot(exp(a + b*x)),x)
```

```
[Out] int(x^2*acot(exp(a + b*x)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^2\,\mathrm{acot}\left(e^a e^{bx}\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*acot(exp(b*x+a)),x)
```

```
[Out] Integral(x**2*acot(exp(a)*exp(b*x)), x)
```

3.224 $\int \cot^{-1}\left(a + bf^{c+dx}\right) dx$

Optimal. Leaf size=196

$$-\frac{i\text{Li}_2\left(1-\frac{2}{1-i\left(bf^{c+dx}+a\right)}\right)}{2d\log(f)}+\frac{i\text{Li}_2\left(1-\frac{2bf^{c+dx}}{(i-a)\left(1-i\left(bf^{c+dx}+a\right)\right)}\right)}{2d\log(f)}-\frac{\log\left(\frac{2}{1-i\left(a+bf^{c+dx}\right)}\right)\cot^{-1}\left(a+bf^{c+dx}\right)}{d\log(f)}+\frac{\log\left(\frac{2bf^{c+dx}}{(-a+i)\left(1-i\left(a+\right.\right.}\right.}{}$$

```
[Out] -arccot(a+b*f^(d*x+c))*ln(2/(1-I*(a+b*f^(d*x+c))))/d/ln(f)+arccot(a+b*f^(d*
x+c))*ln(2*b*f^(d*x+c)/(I-a)/(1-I*(a+b*f^(d*x+c))))/d/ln(f)-1/2*I*polylog(2
,1-2/(1-I*(a+b*f^(d*x+c))))/d/ln(f)+1/2*I*polylog(2,1-2*b*f^(d*x+c)/(I-a)/(
1-I*(a+b*f^(d*x+c))))/d/ln(f)
```

Rubi [A] time = 0.15, antiderivative size = 196, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.500, Rules used = {2282, 5048, 4857, 2402, 2315, 2447}

$$-\frac{i\text{PolyLog}\left(2,1-\frac{2}{1-i\left(a+bf^{c+dx}\right)}\right)}{2d\log(f)}+\frac{i\text{PolyLog}\left(2,1-\frac{2bf^{c+dx}}{(-a+i)\left(1-i\left(a+bf^{c+dx}\right)\right)}\right)}{2d\log(f)}-\frac{\log\left(\frac{2}{1-i\left(a+bf^{c+dx}\right)}\right)\cot^{-1}\left(a+bf^{c+dx}\right)}{d\log(f)}+$$

Antiderivative was successfully verified.

```
[In] Int[ArcCot[a + b*f^(c + d*x)],x]
```

```
[Out] -((ArcCot[a + b*f^(c + d*x)]*Log[2/(1 - I*(a + b*f^(c + d*x)))])/(d*Log[f])
) + (ArcCot[a + b*f^(c + d*x)]*Log[(2*b*f^(c + d*x))/((I - a)*(1 - I*(a + b
*f^(c + d*x))))])/(d*Log[f]) - ((I/2)*PolyLog[2, 1 - 2/(1 - I*(a + b*f^(c +
 d*x)))])/(d*Log[f]) + ((I/2)*PolyLog[2, 1 - (2*b*f^(c + d*x))/((I - a)*(1
- I*(a + b*f^(c + d*x))))])/(d*Log[f])
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2315

```
Int[Log[(c_.)*(x_)]/((d_) + (e_.)*(x_)), x_Symbol] :> -Simp[PolyLog[2, 1 -
c*x]/e, x] /; FreeQ[{c, d, e}, x] && EqQ[e + c*d, 0]
```

Rule 2402

```
Int[Log[(c_.)/((d_) + (e_.)*(x_))]/((f_) + (g_.)*(x_)^2), x_Symbol] :> -Dis
t[e/g, Subst[Int[Log[2*d*x]/(1 - 2*d*x), x], x, 1/(d + e*x)], x] /; FreeQ[{
c, d, e, f, g}, x] && EqQ[c, 2*d] && EqQ[e^2*f + d^2*g, 0]
```

Rule 2447

```
Int[Log[u_]*(Pq_)^(m_.), x_Symbol] :> With[{C = FullSimplify[(Pq^m*(1 - u))
/D[u, x]]}, Simp[C*PolyLog[2, 1 - u], x] /; FreeQ[C, x]] /; IntegerQ[m] &&
PolyQ[Pq, x] && RationalFunctionQ[u, x] && LeQ[RationalFunctionExponents[u,
 x][[2]], Expon[Pq, x]]
```

Rule 4857

```
Int[((a_.) + ArcCot[(c_.)*(x_)]*(b_.))/((d_) + (e_.)*(x_)), x_Symbol] :> -S
imp[((a + b*ArcCot[c*x])*Log[2/(1 - I*c*x)])/e, x] + (-Dist[(b*c)/e, Int[Lo
```

```
g[2/(1 - I*c*x)]/(1 + c^2*x^2), x], x] + Dist[(b*c)/e, Int[Log[(2*c*(d + e*
x))/((c*d + I*e)*(1 - I*c*x))]/(1 + c^2*x^2), x], x] + Simp[((a + b*ArcCot[
c*x])*Log[(2*c*(d + e*x))/((c*d + I*e)*(1 - I*c*x))])/e, x]) /; FreeQ[{a, b
, c, d, e}, x] && NeQ[c^2*d^2 + e^2, 0]
```

Rule 5048

```
Int[((a_.) + ArcCot[(c_) + (d_.)*(x_)]*(b_.))^(p_.)*((e_.) + (f_.)*(x_))^(m
_.), x_Symbol] :> Dist[1/d, Subst[Int[((d*e - c*f)/d + (f*x)/d)^m*(a + b*Ar
cCot[x])^p, x], x, c + d*x], x] /; FreeQ[{a, b, c, d, e, f, m, p}, x] && IG
tQ[p, 0]
```

Rubi steps

$$\int \cot^{-1}\left(a+bf^{c+dx}\right)dx = \frac{\text{Subst}\left(\int \frac{\cot^{-1}(a+bx)}{x}\,dx, x, f^{c+dx}\right)}{d\log(f)}$$

$$= \frac{\text{Subst}\left(\int \frac{\cot^{-1}(x)}{-\frac{a}{b}+\frac{x}{b}}\,dx, x, a+bf^{c+dx}\right)}{bd\log(f)}$$

$$= -\frac{\cot^{-1}\left(a+bf^{c+dx}\right)\log\left(\frac{2}{1-i\left(a+bf^{c+dx}\right)}\right)}{d\log(f)} + \frac{\cot^{-1}\left(a+bf^{c+dx}\right)\log\left(\frac{2bf^{c+dx}}{(i-a)\left(1-i\left(a+bf^{c+dx}\right)\right)}\right)}{d\log(f)} -$$

$$= -\frac{\cot^{-1}\left(a+bf^{c+dx}\right)\log\left(\frac{2}{1-i\left(a+bf^{c+dx}\right)}\right)}{d\log(f)} + \frac{\cot^{-1}\left(a+bf^{c+dx}\right)\log\left(\frac{2bf^{c+dx}}{(i-a)\left(1-i\left(a+bf^{c+dx}\right)\right)}\right)}{d\log(f)} +$$

$$= -\frac{\cot^{-1}\left(a+bf^{c+dx}\right)\log\left(\frac{2}{1-i\left(a+bf^{c+dx}\right)}\right)}{d\log(f)} + \frac{\cot^{-1}\left(a+bf^{c+dx}\right)\log\left(\frac{2bf^{c+dx}}{(i-a)\left(1-i\left(a+bf^{c+dx}\right)\right)}\right)}{d\log(f)} -$$

Mathematica [A] time = 0.19, size = 167, normalized size = 0.85

$$\frac{b\left(\text{Li}_2\left(-\frac{b^2f^{c+dx}}{ab-\sqrt{-b^2}}\right)-\text{Li}_2\left(-\frac{b^2f^{c+dx}}{ab+\sqrt{-b^2}}\right)+dx\log(f)\left(\log\left(\frac{b^2f^{c+dx}}{ab-\sqrt{-b^2}}+1\right)-\log\left(\frac{b^2f^{c+dx}}{ab+\sqrt{-b^2}}+1\right)\right)\right)}{2\sqrt{-b^2}\,d\log(f)}+x\cot^{-1}\left(a+bf^{c+dx}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcCot[a + b*f^(c + d*x)],x]
```

```
[Out] x*ArcCot[a + b*f^(c + d*x)] + (b*(d*x*Log[f]*(Log[1 + (b^2*f^(c + d*x))/(a*
b - Sqrt[-b^2])] - Log[1 + (b^2*f^(c + d*x))/(a*b + Sqrt[-b^2])]) + PolyLog
[2, -((b^2*f^(c + d*x))/(a*b - Sqrt[-b^2]))] - PolyLog[2, -((b^2*f^(c + d*x
))/(a*b + Sqrt[-b^2]))]))/(2*Sqrt[-b^2]*d*Log[f])
```

fricas [A] time = 1.53, size = 212, normalized size = 1.08

$$\frac{2\,dx\,\text{arccot}\left(bf^{dx+c}+a\right)\log(f)-i\,c\log\left(bf^{dx+c}+a+i\right)\log(f)+i\,c\log\left(bf^{dx+c}+a-i\right)\log(f)+(-i\,dx-i\,c)\log}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(a+b*f^(d*x+c)),x, algorithm="fricas")
```

```
[Out] 1/2*(2*d*x*arccot(b*f^(d*x + c) + a)*log(f) - I*c*log(b*f^(d*x + c) + a + I
)*log(f) + I*c*log(b*f^(d*x + c) + a - I)*log(f) + (-I*d*x - I*c)*log(f)*lo
g((a^2 + (a*b + I*b)*f^(d*x + c) + 1)/(a^2 + 1)) + (I*d*x + I*c)*log(f)*log
((a^2 + (a*b - I*b)*f^(d*x + c) + 1)/(a^2 + 1)) - I*dilog(-(a^2 + (a*b + I*
b)*f^(d*x + c) + 1)/(a^2 + 1) + 1) + I*dilog(-(a^2 + (a*b - I*b)*f^(d*x + c
) + 1)/(a^2 + 1) + 1))/(d*log(f))
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \operatorname{arccot}\left(bf^{dx+c} + a\right) dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(a+b*f^(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate(arccot(b*f^(d*x + c) + a), x)
```

maple [A] time = 0.06, size = 186, normalized size = 0.95

$$\frac{\ln\left(b\,f^{dx+c}\right)\operatorname{arccot}\left(a+b\,f^{dx+c}\right)}{d\ln(f)} - \frac{i\ln\left(b\,f^{dx+c}\right)\ln\left(\frac{-b\,f^{dx+c}-a+i}{i-a}\right)}{2d\ln(f)} + \frac{i\ln\left(b\,f^{dx+c}\right)\ln\left(\frac{i+b\,f^{dx+c}+a}{i+a}\right)}{2d\ln(f)} - \frac{i\operatorname{dilog}\left(\frac{-b\,f^{dx+c}-}{i-a}\right.}{2d\ln(f)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arccot(a+b*f^(d*x+c)),x)
```

```
[Out] 1/d/ln(f)*ln(b*f^(d*x+c))*arccot(a+b*f^(d*x+c))-1/2*I/d/ln(f)*ln(b*f^(d*x+c
))*ln((-b*f^(d*x+c)-a+I)/(I-a))+1/2*I/d/ln(f)*ln(b*f^(d*x+c))*ln((I+b*f^(d*
x+c)+a)/(I+a))-1/2*I/d/ln(f)*dilog((-b*f^(d*x+c)-a+I)/(I-a))+1/2*I/d/ln(f)*
dilog((I+b*f^(d*x+c)+a)/(I+a))
```

maxima [A] time = 0.51, size = 189, normalized size = 0.96

$$\frac{(dx+c)\operatorname{arccot}\left(bf^{dx+c}+a\right)}{d} + \frac{2\,(dx+c)\arctan\left(\frac{b^2f^{dx+c}+ab}{b}\right)\log(f) + \left(\pi - \arctan\left(\frac{1}{a}\right)\right)\log\left(b^2f^{2\,dx+2\,c} + 2\,abf^{c}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(a+b*f^(d*x+c)),x, algorithm="maxima")
```

```
[Out] (d*x + c)*arccot(b*f^(d*x + c) + a)/d + 1/2*(2*(d*x + c)*arctan((b^2*f^(d*x
 + c) + a*b)/b)*log(f) + (pi - arctan(1/a))*log(b^2*f^(2*d*x + 2*c) + 2*a*b
*f^(d*x + c) + a^2 + 1) - arctan(b*f^(d*x + c) + a)*log(b^2*f^(2*d*x + 2*c)
/(a^2 + 1)) + I*dilog((I*b*f^(d*x + c) + I*a + 1)/(I*a + 1)) - I*dilog((I*b
*f^(d*x + c) + I*a - 1)/(I*a - 1)))/(d*log(f))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \operatorname{acot}\left(a+b\,f^{c+d\,x}\right) dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(acot(a + b*f^(c + d*x)),x)
```

```
[Out] int(acot(a + b*f^(c + d*x)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(acot(a+b*f**(d*x+c)),x)
```

```
[Out] Timed out
```

3.225 $\int x \cot^{-1}\left(a + bf^{c+dx}\right) dx$

Optimal. Leaf size=250

$$\frac{i\text{Li}_3\left(\frac{bf^{c+dx}}{i-a}\right)}{2d^2\log^2(f)}-\frac{i\text{Li}_3\left(-\frac{bf^{c+dx}}{a+i}\right)}{2d^2\log^2(f)}-\frac{ix\text{Li}_2\left(\frac{bf^{c+dx}}{i-a}\right)}{2d\log(f)}+\frac{ix\text{Li}_2\left(-\frac{bf^{c+dx}}{a+i}\right)}{2d\log(f)}-\frac{1}{4}ix^2\log\left(1-\frac{bf^{c+dx}}{-a+i}\right)+\frac{1}{4}ix^2\log\left(1+\frac{bf^{c+dx}}{a+i}\right)+$$

```
[Out] -1/4*I*x^2*ln(1-b*f^(d*x+c)/(I-a))+1/4*I*x^2*ln(1+b*f^(d*x+c)/(I+a))+1/4*I*
x^2*ln(1-I/(a+b*f^(d*x+c)))-1/4*I*x^2*ln(1+I/(a+b*f^(d*x+c)))-1/2*I*x*polyl
og(2,b*f^(d*x+c)/(I-a))/d/ln(f)+1/2*I*x*polylog(2,-b*f^(d*x+c)/(I+a))/d/ln(
f)+1/2*I*polylog(3,b*f^(d*x+c)/(I-a))/d^2/ln(f)^2-1/2*I*polylog(3,-b*f^(d*x
+c)/(I+a))/d^2/ln(f)^2
```

Rubi [A] time = 2.65, antiderivative size = 250, normalized size of antiderivative = 1.00, number of steps used = 25, number of rules used = 8, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.571, Rules used = {5144, 2551, 12, 6742, 2190, 2531, 2282, 6589}

$$\frac{i\text{PolyLog}\left(3,\frac{bf^{c+dx}}{-a+i}\right)}{2d^2\log^2(f)}-\frac{i\text{PolyLog}\left(3,-\frac{bf^{c+dx}}{a+i}\right)}{2d^2\log^2(f)}-\frac{ix\text{PolyLog}\left(2,\frac{bf^{c+dx}}{-a+i}\right)}{2d\log(f)}+\frac{ix\text{PolyLog}\left(2,-\frac{bf^{c+dx}}{a+i}\right)}{2d\log(f)}-\frac{1}{4}ix^2\log\left(1-\frac{b}{-}\right.$$

Antiderivative was successfully verified.

```
[In] Int[x*ArcCot[a + b*f^(c + d*x)],x]
```

```
[Out] (-I/4)*x^2*Log[1 - (b*f^(c + d*x))/(I - a)] + (I/4)*x^2*Log[1 + (b*f^(c + d
*x))/(I + a)] + (I/4)*x^2*Log[1 - I/(a + b*f^(c + d*x))] - (I/4)*x^2*Log[1
+ I/(a + b*f^(c + d*x))] - ((I/2)*x*PolyLog[2, (b*f^(c + d*x))/(I - a)])/(d
*Log[f]) + ((I/2)*x*PolyLog[2, -((b*f^(c + d*x))/(I + a))])/(d*Log[f]) + ((
I/2)*PolyLog[3, (b*f^(c + d*x))/(I - a)])/(d^2*Log[f]^2) - ((I/2)*PolyLog[3
, -((b*f^(c + d*x))/(I + a))])/(d^2*Log[f]^2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
```

```
, g, n}, x] && GtQ[m, 0]
```

Rule 2551

```
Int[Log[u_]*((a_.) + (b_.)*(x_))^(m_.), x_Symbol] :> Simp[((a + b*x)^(m + 1
)*Log[u])/(b*(m + 1)), x] - Dist[1/(b*(m + 1)), Int[SimplifyIntegrand[((a +
 b*x)^(m + 1)*D[u, x])/u, x], x], x] /; FreeQ[{a, b, m}, x] && InverseFunct
ionFreeQ[u, x] && NeQ[m, -1]
```

Rule 5144

```
Int[ArcCot[(a_.) + (b_.)*(f_)^((c_.) + (d_.)*(x_))]*(x_)^(m_.), x_Symbol] :
> Dist[I/2, Int[x^m*Log[1 - I/(a + b*f^(c + d*x))], x], x] - Dist[I/2, Int[
x^m*Log[1 + I/(a + b*f^(c + d*x))], x], x] /; FreeQ[{a, b, c, d, f}, x] &&
IntegerQ[m] && m > 0
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int x\cot^{-1}\left(a+bf^{c+dx}\right)dx=\frac{1}{2}i\int x\log\left(1-\frac{i}{a+bf^{c+dx}}\right)dx-\frac{1}{2}i\int x\log\left(1+\frac{i}{a+bf^{c+dx}}\right)dx$$

$$=\frac{1}{4}ix^2\log\left(1-\frac{i}{a+bf^{c+dx}}\right)-\frac{1}{4}ix^2\log\left(1+\frac{i}{a+bf^{c+dx}}\right)+\frac{1}{4}\int\frac{bdf^{c+dx}x^2\log}{\left(i(1-ia)+bf^{c+dx}\right)\left(\right.}$$

$$=\frac{1}{4}ix^2\log\left(1-\frac{i}{a+bf^{c+dx}}\right)-\frac{1}{4}ix^2\log\left(1+\frac{i}{a+bf^{c+dx}}\right)+\frac{1}{4}(bd\log(f))\int\frac{}{\left(i(1-ia)\right.}$$

$$=\frac{1}{4}ix^2\log\left(1-\frac{i}{a+bf^{c+dx}}\right)-\frac{1}{4}ix^2\log\left(1+\frac{i}{a+bf^{c+dx}}\right)+\frac{1}{4}(bd\log(f))\int\left(\frac{if^{c+dx}x^2}{a+bf^{c+}}\right.$$

$$=\frac{1}{4}ix^2\log\left(1-\frac{i}{a+bf^{c+dx}}\right)-\frac{1}{4}ix^2\log\left(1+\frac{i}{a+bf^{c+dx}}\right)-\frac{1}{4}(ibd\log(f))\int\frac{f^{c+dx}}{-i+a+b}$$

$$=-\frac{1}{4}ix^2\log\left(1-\frac{bf^{c+dx}}{i-a}\right)+\frac{1}{4}ix^2\log\left(1+\frac{bf^{c+dx}}{i+a}\right)+\frac{1}{4}ix^2\log\left(1-\frac{i}{a+bf^{c+dx}}\right)-\frac{1}{4}ix^2$$

$$=-\frac{1}{4}ix^2\log\left(1-\frac{bf^{c+dx}}{i-a}\right)+\frac{1}{4}ix^2\log\left(1+\frac{bf^{c+dx}}{i+a}\right)+\frac{1}{4}ix^2\log\left(1-\frac{i}{a+bf^{c+dx}}\right)-\frac{1}{4}ix^2$$

$$=-\frac{1}{4}ix^2\log\left(1-\frac{bf^{c+dx}}{i-a}\right)+\frac{1}{4}ix^2\log\left(1+\frac{bf^{c+dx}}{i+a}\right)+\frac{1}{4}ix^2\log\left(1-\frac{i}{a+bf^{c+dx}}\right)-\frac{1}{4}ix^2$$

$$=-\frac{1}{4}ix^2\log\left(1-\frac{bf^{c+dx}}{i-a}\right)+\frac{1}{4}ix^2\log\left(1+\frac{bf^{c+dx}}{i+a}\right)+\frac{1}{4}ix^2\log\left(1-\frac{i}{a+bf^{c+dx}}\right)-\frac{1}{4}ix^2$$

Mathematica [A] time = 0.31, size = 250, normalized size = 1.00

$$\frac{i\text{Li}_3\left(\frac{bf^{c+dx}}{i-a}\right)}{2d^2\log^2(f)}-\frac{i\text{Li}_3\left(-\frac{bf^{c+dx}}{a+i}\right)}{2d^2\log^2(f)}-\frac{ix\text{Li}_2\left(\frac{bf^{c+dx}}{i-a}\right)}{2d\log(f)}+\frac{ix\text{Li}_2\left(-\frac{bf^{c+dx}}{a+i}\right)}{2d\log(f)}-\frac{1}{4}ix^2\log\left(1-\frac{bf^{c+dx}}{-a+i}\right)+\frac{1}{4}ix^2\log\left(1+\frac{bf^{c+dx}}{a+i}\right)+$$

Antiderivative was successfully verified.

```
[In] Integrate[x*ArcCot[a + b*f^(c + d*x)],x]
```

```
[Out] (-1/4*I)*x^2*Log[1 - (b*f^(c + d*x))/(I - a)] + (I/4)*x^2*Log[1 + (b*f^(c +
 d*x))/(I + a)] + (I/4)*x^2*Log[1 - I/(a + b*f^(c + d*x))] - (I/4)*x^2*Log[
1 + I/(a + b*f^(c + d*x))] - ((I/2)*x*PolyLog[2, (b*f^(c + d*x))/(I - a)])/
(d*Log[f]) + ((I/2)*x*PolyLog[2, -((b*f^(c + d*x))/(I + a))])/(d*Log[f]) +
((I/2)*PolyLog[3, (b*f^(c + d*x))/(I - a)])/(d^2*Log[f]^2) - ((I/2)*PolyLog
[3, -((b*f^(c + d*x))/(I + a))])/(d^2*Log[f]^2)
```

fricas [C] time = 0.70, size = 304, normalized size = 1.22

$$\frac{2\,d^2x^2\operatorname{arccot}\left(bf^{dx+c}+a\right)\log(f)^2+i\,c^2\log\left(bf^{dx+c}+a+i\right)\log(f)^2-i\,c^2\log\left(bf^{dx+c}+a-i\right)\log(f)^2-2i\,dx}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*arccot(a+b*f^(d*x+c)),x, algorithm="fricas")
```

```
[Out] 1/4*(2*d^2*x^2*arccot(b*f^(d*x + c) + a)*log(f)^2 + I*c^2*log(b*f^(d*x + c)
 + a + I)*log(f)^2 - I*c^2*log(b*f^(d*x + c) + a - I)*log(f)^2 - 2*I*d*x*di
log(-(a^2 + (a*b + I*b)*f^(d*x + c) + 1)/(a^2 + 1) + 1)*log(f) + 2*I*d*x*di
log(-(a^2 + (a*b - I*b)*f^(d*x + c) + 1)/(a^2 + 1) + 1)*log(f) + (-I*d^2*x^
2 + I*c^2)*log(f)^2*log((a^2 + (a*b + I*b)*f^(d*x + c) + 1)/(a^2 + 1)) + (I
*d^2*x^2 - I*c^2)*log(f)^2*log((a^2 + (a*b - I*b)*f^(d*x + c) + 1)/(a^2 + 1
)) + 2*I*polylog(3, -(a*b + I*b)*f^(d*x + c)/(a^2 + 1)) - 2*I*polylog(3, -(
a*b - I*b)*f^(d*x + c)/(a^2 + 1)))/(d^2*log(f)^2)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x\operatorname{arccot}\left(bf^{dx+c}+a\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*arccot(a+b*f^(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate(x*arccot(b*f^(d*x + c) + a), x)
```

maple [B] time = 0.48, size = 678, normalized size = 2.71

$$\frac{i\ln\left(1-\frac{ib\,f^{dx}f^c}{-ia+1}\right)c^2}{4d^2}+\frac{\pi\,x^2}{4}+\frac{i\ln\left(1-\frac{ib\,f^{dx}f^c}{-ia+1}\right)xc}{2d}+\frac{i\,\text{polylog}\left(3,\frac{ib\,f^{dx}f^c}{-ia-1}\right)}{2d^2\ln(f)^2}-\frac{ic^2\ln\left(if^{dx}f^cb+ia+1\right)}{4d^2}-\frac{i\,\text{polylog}\left(2,\right.}{2d\ln(}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*arccot(a+b*f^(d*x+c)),x)
```

```
[Out] 1/4*I/d^2*ln(1-I*b/(1-I*a)*f^(d*x)*f^c)*c^2+1/4*Pi*x^2+1/2*I/d*ln(1-I*b/(1-
I*a)*f^(d*x)*f^c)*x*c-1/4*I/d^2*c^2*ln(I*f^(d*x)*f^c*b+I*a+1)-1/2*I/d^2/ln(
f)*polylog(2,I*b/(-I*a-1)*f^(d*x)*f^c)*c-1/2*I/d^2/ln(f)*c*dilog((b*f^(d*x)
*f^c+I+a)/(I+a))+1/2*I/d^2/ln(f)^2*polylog(3,I*b/(-I*a-1)*f^(d*x)*f^c)-1/2*
I/d^2*c^2*ln((b*f^(d*x)*f^c+I+a)/(I+a))+1/4*I*ln(1-I*b/(1-I*a)*f^(d*x)*f^c)
*x^2+1/2*I/d*c*ln((b*f^(d*x)*f^c+a-I)/(-I+a))*x+1/2*I/d^2*c^2*ln((b*f^(d*x)
```

```
*f^c+a-I)/(-I+a))-1/4*I*ln(1-I*b/(-I*a-1)*f^(d*x)*f^c)*x^2+1/2*I/d/ln(f)*po
lylog(2,I*b/(1-I*a)*f^(d*x)*f^c)*x+1/2*I/d^2/ln(f)*c*dilog((b*f^(d*x)*f^c+a
-I)/(-I+a))+1/2*I/d^2/ln(f)*polylog(2,I*b/(1-I*a)*f^(d*x)*f^c)*c-1/2*I/d*ln
(1-I*b/(-I*a-1)*f^(d*x)*f^c)*x*c+1/4*I/d^2*c^2*ln(1-I*a-I*f^(d*x)*f^c*b)+1/
4*I*x^2*ln(1+I*(a+b*f^(d*x+c)))-1/4*I/d^2*ln(1-I*b/(-I*a-1)*f^(d*x)*f^c)*c^
2-1/2*I/d*c*ln((b*f^(d*x)*f^c+I+a)/(I+a))*x-1/4*I*x^2*ln(1-I*(a+b*f^(d*x+c)
))-1/2*I/d/ln(f)*polylog(2,I*b/(-I*a-1)*f^(d*x)*f^c)*x-1/2*I/d^2/ln(f)^2*po
lylog(3,I*b/(1-I*a)*f^(d*x)*f^c)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$bdf^c \int \frac{f^{dx}x^2}{2\left(b^2 f^{2\,dx} f^{2\,c} + 2\,abf^{dx} f^c + a^2 + 1\right)}\,dx \log(f) + \frac{1}{2}\,x^2 \arctan\left(\frac{1}{bf^{dx} f^c + a}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*arccot(a+b*f^(d*x+c)),x, algorithm="maxima")
```

```
[Out] b*d*f^c*integrate(1/2*f^(d*x)*x^2/(b^2*f^(2*d*x)*f^(2*c) + 2*a*b*f^(d*x)*f^
c + a^2 + 1), x)*log(f) + 1/2*x^2*arctan(1/(b*f^(d*x)*f^c + a))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int x\,\mathrm{acot}\left(a + b\,f^{c+d\,x}\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*acot(a + b*f^(c + d*x)),x)
```

```
[Out] int(x*acot(a + b*f^(c + d*x)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*acot(a+b*f**(d*x+c)),x)
```

```
[Out] Timed out
```

3.226 $\int x^2 \cot^{-1}\left(a + bf^{c+dx}\right) dx$

Optimal. Leaf size=313

$$-\frac{i\text{Li}_4\left(\frac{bf^{c+dx}}{i-a}\right)}{d^3\log^3(f)}+\frac{i\text{Li}_4\left(-\frac{bf^{c+dx}}{a+i}\right)}{d^3\log^3(f)}+\frac{ix\text{Li}_3\left(\frac{bf^{c+dx}}{i-a}\right)}{d^2\log^2(f)}-\frac{ix\text{Li}_3\left(-\frac{bf^{c+dx}}{a+i}\right)}{d^2\log^2(f)}-\frac{ix^2\text{Li}_2\left(\frac{bf^{c+dx}}{i-a}\right)}{2d\log(f)}+\frac{ix^2\text{Li}_2\left(-\frac{bf^{c+dx}}{a+i}\right)}{2d\log(f)}-\frac{1}{6}ix^3\log\left(1\right.$$

```
[Out] -1/6*I*x^3*ln(1-b*f^(d*x+c)/(I-a))+1/6*I*x^3*ln(1+b*f^(d*x+c)/(I+a))+1/6*I*
x^3*ln(1-I/(a+b*f^(d*x+c)))-1/6*I*x^3*ln(1+I/(a+b*f^(d*x+c)))-1/2*I*x^2*pol
ylog(2,b*f^(d*x+c)/(I-a))/d/ln(f)+1/2*I*x^2*polylog(2,-b*f^(d*x+c)/(I+a))/d
/ln(f)+I*x*polylog(3,b*f^(d*x+c)/(I-a))/d^2/ln(f)^2-I*x*polylog(3,-b*f^(d*x
+c)/(I+a))/d^2/ln(f)^2-I*polylog(4,b*f^(d*x+c)/(I-a))/d^3/ln(f)^3+I*polylog
(4,-b*f^(d*x+c)/(I+a))/d^3/ln(f)^3
```

Rubi [A] time = 2.45, antiderivative size = 313, normalized size of antiderivative = 1.00, number of steps used = 29, number of rules used = 9, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.562, Rules used = {5144, 2551, 12, 6742, 2190, 2531, 6609, 2282, 6589}

$$\frac{ix\text{PolyLog}\left(3,\frac{bf^{c+dx}}{-a+i}\right)}{d^2\log^2(f)}-\frac{ix\text{PolyLog}\left(3,-\frac{bf^{c+dx}}{a+i}\right)}{d^2\log^2(f)}-\frac{i\text{PolyLog}\left(4,\frac{bf^{c+dx}}{-a+i}\right)}{d^3\log^3(f)}+\frac{i\text{PolyLog}\left(4,-\frac{bf^{c+dx}}{a+i}\right)}{d^3\log^3(f)}-\frac{ix^2\text{PolyLog}\left(2,\right.}{2d\log(f}$$

Antiderivative was successfully verified.

```
[In] Int[x^2*ArcCot[a + b*f^(c + d*x)],x]
```

```
[Out] (-I/6)*x^3*Log[1 - (b*f^(c + d*x))/(I - a)] + (I/6)*x^3*Log[1 + (b*f^(c + d
*x))/(I + a)] + (I/6)*x^3*Log[1 - I/(a + b*f^(c + d*x))] - (I/6)*x^3*Log[1
+ I/(a + b*f^(c + d*x))] - ((I/2)*x^2*PolyLog[2, (b*f^(c + d*x))/(I - a)])/
(d*Log[f]) + ((I/2)*x^2*PolyLog[2, -((b*f^(c + d*x))/(I + a))])/(d*Log[f])
+ (I*x*PolyLog[3, (b*f^(c + d*x))/(I - a)])/(d^2*Log[f]^2) - (I*x*PolyLog[3
, -((b*f^(c + d*x))/(I + a))])/(d^2*Log[f]^2) - (I*PolyLog[4, (b*f^(c + d*x
))/(I - a)])/(d^3*Log[f]^3) + (I*PolyLog[4, -((b*f^(c + d*x))/(I + a))])/(d
^3*Log[f]^3)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 2190

```
Int[(((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)*((c_.) + (d_.)*(x_))^(m_.))/
((a_) + (b_.)*((F_)^((g_.)*((e_.) + (f_.)*(x_))))^(n_.)), x_Symbol] :> Simp
[((c + d*x)^m*Log[1 + (b*(F^(g*(e + f*x)))^n)/a])/(b*f*g*n*Log[F]), x] - Di
st[(d*m)/(b*f*g*n*Log[F]), Int[(c + d*x)^(m - 1)*Log[1 + (b*(F^(g*(e + f*x)
))^n)/a], x], x] /; FreeQ[{F, a, b, c, d, e, f, g, n}, x] && IGtQ[m, 0]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 2531

```
Int[Log[1 + (e_.)*((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.)]*((f_.) + (g_.)
*(x_))^(m_.), x_Symbol] :> -Simp[((f + g*x)^m*PolyLog[2, -(e*(F^(c*(a + b*x
```

```
)))^n)])/(b*c*n*Log[F]), x] + Dist[(g*m)/(b*c*n*Log[F]), Int[(f + g*x)^(m -
 1)*PolyLog[2, -(e*(F^(c*(a + b*x)))^n)], x], x] /; FreeQ[{F, a, b, c, e, f
, g, n}, x] && GtQ[m, 0]
```

Rule 2551

```
Int[Log[u_]*((a_.) + (b_.)*(x_))^(m_.), x_Symbol] :> Simp[((a + b*x)^(m + 1
)*Log[u])/(b*(m + 1)), x] - Dist[1/(b*(m + 1)), Int[SimplifyIntegrand[((a +
 b*x)^(m + 1)*D[u, x])/u, x], x], x] /; FreeQ[{a, b, m}, x] && InverseFunct
ionFreeQ[u, x] && NeQ[m, -1]
```

Rule 5144

```
Int[ArcCot[(a_.) + (b_.)*(f_)^((c_.) + (d_.)*(x_))]*(x_)^(m_.), x_Symbol] :
> Dist[I/2, Int[x^m*Log[1 - I/(a + b*f^(c + d*x))], x], x] - Dist[I/2, Int[
x^m*Log[1 + I/(a + b*f^(c + d*x))], x], x] /; FreeQ[{a, b, c, d, f}, x] &&
IntegerQ[m] && m > 0
```

Rule 6589

```
Int[PolyLog[n_, (c_.)*((a_.) + (b_.)*(x_))^(p_.)]/((d_.) + (e_.)*(x_)), x_S
ymbol] :> Simp[PolyLog[n + 1, c*(a + b*x)^p]/(e*p), x] /; FreeQ[{a, b, c, d
, e, n, p}, x] && EqQ[b*d, a*e]
```

Rule 6609

```
Int[((e_.) + (f_.)*(x_))^(m_.)*PolyLog[n_, (d_.)*((F_)^((c_.)*((a_.) + (b_.
)*(x_))))^(p_.)], x_Symbol] :> Simp[((e + f*x)^m*PolyLog[n + 1, d*(F^(c*(a
+ b*x)))^p])/(b*c*p*Log[F]), x] - Dist[(f*m)/(b*c*p*Log[F]), Int[(e + f*x)^
(m - 1)*PolyLog[n + 1, d*(F^(c*(a + b*x)))^p], x], x] /; FreeQ[{F, a, b, c,
 d, e, f, n, p}, x] && GtQ[m, 0]
```

Rule 6742

```
Int[u_, x_Symbol] :> With[{v = ExpandIntegrand[u, x]}, Int[v, x] /; SumQ[v]
]
```

Rubi steps

$$\int x^2 \cot^{-1}\left(a+bf^{c+dx}\right)dx = \frac{1}{2}i\int x^2\log\left(1-\frac{i}{a+bf^{c+dx}}\right)dx - \frac{1}{2}i\int x^2\log\left(1+\frac{i}{a+bf^{c+dx}}\right)dx$$

$$= \frac{1}{6}ix^3\log\left(1-\frac{i}{a+bf^{c+dx}}\right) - \frac{1}{6}ix^3\log\left(1+\frac{i}{a+bf^{c+dx}}\right) + \frac{1}{6}\int \frac{bdf^{c+dx}x^3}{\left(i(1-ia)+bf^{c+d}\right.}$$

$$= \frac{1}{6}ix^3\log\left(1-\frac{i}{a+bf^{c+dx}}\right) - \frac{1}{6}ix^3\log\left(1+\frac{i}{a+bf^{c+dx}}\right) + \frac{1}{6}(bd\log(f))\int \frac{}{\left(i(1-\right.}$$

$$= \frac{1}{6}ix^3\log\left(1-\frac{i}{a+bf^{c+dx}}\right) - \frac{1}{6}ix^3\log\left(1+\frac{i}{a+bf^{c+dx}}\right) + \frac{1}{6}(bd\log(f))\int\left(\frac{if^{c+}}{a+b}\right.$$

$$= \frac{1}{6}ix^3\log\left(1-\frac{i}{a+bf^{c+dx}}\right) - \frac{1}{6}ix^3\log\left(1+\frac{i}{a+bf^{c+dx}}\right) - \frac{1}{6}(ibd\log(f))\int \frac{f}{-i+}$$

$$= -\frac{1}{6}ix^3\log\left(1-\frac{bf^{c+dx}}{i-a}\right) + \frac{1}{6}ix^3\log\left(1+\frac{bf^{c+dx}}{i+a}\right) + \frac{1}{6}ix^3\log\left(1-\frac{i}{a+bf^{c+dx}}\right) -$$

$$= -\frac{1}{6}ix^3\log\left(1-\frac{bf^{c+dx}}{i-a}\right) + \frac{1}{6}ix^3\log\left(1+\frac{bf^{c+dx}}{i+a}\right) + \frac{1}{6}ix^3\log\left(1-\frac{i}{a+bf^{c+dx}}\right) -$$

$$= -\frac{1}{6}ix^3\log\left(1-\frac{bf^{c+dx}}{i-a}\right) + \frac{1}{6}ix^3\log\left(1+\frac{bf^{c+dx}}{i+a}\right) + \frac{1}{6}ix^3\log\left(1-\frac{i}{a+bf^{c+dx}}\right) -$$

$$= -\frac{1}{6}ix^3\log\left(1-\frac{bf^{c+dx}}{i-a}\right) + \frac{1}{6}ix^3\log\left(1+\frac{bf^{c+dx}}{i+a}\right) + \frac{1}{6}ix^3\log\left(1-\frac{i}{a+bf^{c+dx}}\right) -$$

$$= -\frac{1}{6}ix^3\log\left(1-\frac{bf^{c+dx}}{i-a}\right) + \frac{1}{6}ix^3\log\left(1+\frac{bf^{c+dx}}{i+a}\right) + \frac{1}{6}ix^3\log\left(1-\frac{i}{a+bf^{c+dx}}\right) -$$

Mathematica [A] time = 0.24, size = 313, normalized size = 1.00

$$-\frac{i\text{Li}_4\left(\frac{bf^{c+dx}}{i-a}\right)}{d^3\log^3(f)}+\frac{i\text{Li}_4\left(-\frac{bf^{c+dx}}{a+i}\right)}{d^3\log^3(f)}+\frac{ix\text{Li}_3\left(\frac{bf^{c+dx}}{i-a}\right)}{d^2\log^2(f)}-\frac{ix\text{Li}_3\left(-\frac{bf^{c+dx}}{a+i}\right)}{d^2\log^2(f)}-\frac{ix^2\text{Li}_2\left(\frac{bf^{c+dx}}{i-a}\right)}{2d\log(f)}+\frac{ix^2\text{Li}_2\left(-\frac{bf^{c+dx}}{a+i}\right)}{2d\log(f)}-\frac{1}{6}ix^3\log\left(1\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*ArcCot[a + b*f^(c + d*x)],x]
```

```
[Out] (-1/6*I)*x^3*Log[1 - (b*f^(c + d*x))/(I - a)] + (I/6)*x^3*Log[1 + (b*f^(c +
 d*x))/(I + a)] + (I/6)*x^3*Log[1 - I/(a + b*f^(c + d*x))] - (I/6)*x^3*Log[
1 + I/(a + b*f^(c + d*x))] - ((I/2)*x^2*PolyLog[2, (b*f^(c + d*x))/(I - a)]
)/(d*Log[f]) + ((I/2)*x^2*PolyLog[2, -((b*f^(c + d*x))/(I + a))])/(d*Log[f]
) + (I*x*PolyLog[3, (b*f^(c + d*x))/(I - a)])/(d^2*Log[f]^2) - (I*x*PolyLog
[3, -((b*f^(c + d*x))/(I + a))])/(d^2*Log[f]^2) - (I*PolyLog[4, (b*f^(c + d
*x))/(I - a)])/(d^3*Log[f]^3) + (I*PolyLog[4, -((b*f^(c + d*x))/(I + a))])/
(d^3*Log[f]^3)
```

fricas [C] time = 0.79, size = 378, normalized size = 1.21

$$\frac{2\,d^3x^3\,\text{arccot}\left(bf^{dx+c}+a\right)\log(f)^3-3i\,d^2x^2\text{Li}_2\left(-\frac{a^2+(ab+i\,b)f^{dx+c}+1}{a^2+1}+1\right)\log(f)^2+3i\,d^2x^2\text{Li}_2\left(-\frac{a^2+(ab-i\,b)f^{dx+c}+1}{a^2+1}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*arccot(a+b*f^(d*x+c)),x, algorithm="fricas")
```

```
[Out] 1/6*(2*d^3*x^3*arccot(b*f^(d*x + c) + a)*log(f)^3 - 3*I*d^2*x^2*dilog(-(a^2
 + (a*b + I*b)*f^(d*x + c) + 1)/(a^2 + 1) + 1)*log(f)^2 + 3*I*d^2*x^2*dilog
(-(a^2 + (a*b - I*b)*f^(d*x + c) + 1)/(a^2 + 1) + 1)*log(f)^2 - I*c^3*log(b
*f^(d*x + c) + a + I)*log(f)^3 + I*c^3*log(b*f^(d*x + c) + a - I)*log(f)^3
+ (-I*d^3*x^3 - I*c^3)*log(f)^3*log((a^2 + (a*b + I*b)*f^(d*x + c) + 1)/(a^
2 + 1)) + (I*d^3*x^3 + I*c^3)*log(f)^3*log((a^2 + (a*b - I*b)*f^(d*x + c) +
 1)/(a^2 + 1)) + 6*I*d*x*log(f)*polylog(3, -(a*b + I*b)*f^(d*x + c)/(a^2 +
1)) - 6*I*d*x*log(f)*polylog(3, -(a*b - I*b)*f^(d*x + c)/(a^2 + 1)) - 6*I*p
olylog(4, -(a*b + I*b)*f^(d*x + c)/(a^2 + 1)) + 6*I*polylog(4, -(a*b - I*b)
*f^(d*x + c)/(a^2 + 1)))/(d^3*log(f)^3)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^2 \operatorname{arccot}\left(bf^{dx+c} + a\right) dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*arccot(a+b*f^(d*x+c)),x, algorithm="giac")
```

```
[Out] integrate(x^2*arccot(b*f^(d*x + c) + a), x)
```

maple [B] time = 0.48, size = 764, normalized size = 2.44

$$-\frac{i\ln\left(1-\frac{ib\,f^{dx}f^{c}}{-ia+1}\right)x\,c^{2}}{2d^{2}}-\frac{ic^{2}\ln\left(\frac{b\,f^{dx}f^{c}+a-i}{-i+a}\right)x}{2d^{2}}+\frac{i\ln\left(1-\frac{ib\,f^{dx}f^{c}}{-ia-1}\right)x\,c^{2}}{2d^{2}}+\frac{ic^{2}\ln\left(\frac{b\,f^{dx}f^{c}+i+a}{i+a}\right)x}{2d^{2}}+\frac{i\operatorname{polylog}\left(2,\frac{ib\,f^{dx}f^{c}}{-ia-1}\right)c^{2}}{2d^{3}\ln(f)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*arccot(a+b*f^(d*x+c)),x)
```

```
[Out] -I/d^2/ln(f)^2*polylog(3,I*b/(1-I*a)*f^(d*x)*f^c)*x+I/d^2/ln(f)^2*polylog(3
,I*b/(-I*a-1)*f^(d*x)*f^c)*x+1/3*I/d^3*ln(1-I*b/(-I*a-1)*f^(d*x)*f^c)*c^3-1
/2*I/d^3*c^3*ln((b*f^(d*x)*f^c+a-I)/(-I+a))+1/2*I/d^3*c^3*ln((b*f^(d*x)*f^c
+I+a)/(I+a))-1/3*I/d^3*ln(1-I*b/(1-I*a)*f^(d*x)*f^c)*c^3-1/6*I/d^3*c^3*ln(1
-I*a-I*f^(d*x)*f^c*b)-I/d^3/ln(f)^3*polylog(4,I*b/(-I*a-1)*f^(d*x)*f^c)+1/6
*I/d^3*c^3*ln(I*f^(d*x)*f^c*b+I*a+1)+I/d^3/ln(f)^3*polylog(4,I*b/(1-I*a)*f^
(d*x)*f^c)+1/6*Pi*x^3+1/6*I*x^3*ln(1+I*(a+b*f^(d*x+c)))-1/6*I*ln(1-I*b/(-I*
a-1)*f^(d*x)*f^c)*x^3+1/6*I*ln(1-I*b/(1-I*a)*f^(d*x)*f^c)*x^3-1/6*I*x^3*ln(
1-I*(a+b*f^(d*x+c)))-1/2*I/d^2*ln(1-I*b/(1-I*a)*f^(d*x)*f^c)*x*c^2-1/2*I/d/
ln(f)*polylog(2,I*b/(-I*a-1)*f^(d*x)*f^c)*x^2+1/2*I/d^3/ln(f)*polylog(2,I*b
/(-I*a-1)*f^(d*x)*f^c)*c^2-1/2*I/d^3/ln(f)*c^2*dilog((b*f^(d*x)*f^c+a-I)/(-
I+a))-1/2*I/d^2*c^2*ln((b*f^(d*x)*f^c+a-I)/(-I+a))*x+1/2*I/d^2*ln(1-I*b/(-I
*a-1)*f^(d*x)*f^c)*x*c^2+1/2*I/d/ln(f)*polylog(2,I*b/(1-I*a)*f^(d*x)*f^c)*x
^2-1/2*I/d^3/ln(f)*polylog(2,I*b/(1-I*a)*f^(d*x)*f^c)*c^2+1/2*I/d^3/ln(f)*c
^2*dilog((b*f^(d*x)*f^c+I+a)/(I+a))+1/2*I/d^2*c^2*ln((b*f^(d*x)*f^c+I+a)/(I
+a))*x
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$bdf^{c}\int\frac{f^{dx}x^{3}}{3\left(b^{2}f^{2\,dx}f^{2\,c}+2\,abf^{dx}f^{c}+a^{2}+1\right)}\,dx\log(f)+\frac{1}{3}\,x^{3}\arctan\left(\frac{1}{bf^{dx}f^{c}+a}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*arccot(a+b*f^(d*x+c)),x, algorithm="maxima")
```

```
[Out] b*d*f^c*integrate(1/3*f^(d*x)*x^3/(b^2*f^(2*d*x)*f^(2*c) + 2*a*b*f^(d*x)*f^
c + a^2 + 1), x)*log(f) + 1/3*x^3*arctan(1/(b*f^(d*x)*f^c + a))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int x^2\,\mathrm{acot}\left(a+b\,f^{c+d\,x}\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*acot(a + b*f^(c + d*x)),x)
```

```
[Out] int(x^2*acot(a + b*f^(c + d*x)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*acot(a+b*f**(d*x+c)),x)
```

```
[Out] Timed out
```

3.227 $\int e^{-x} \cot^{-1}(e^x)\, dx$

Optimal. Leaf size=27

$$-x+\frac{1}{2}\log\left(e^{2x}+1\right)-e^{-x}\cot^{-1}\left(e^x\right)$$

```
[Out] -x-arccot(exp(x))/exp(x)+1/2*ln(1+exp(2*x))
```

Rubi [A] time = 0.02, antiderivative size = 27, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 6, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.600, Rules used = {2194, 5208, 2282, 36, 29, 31}

$$-x+\frac{1}{2}\log\left(e^{2x}+1\right)-e^{-x}\cot^{-1}\left(e^x\right)$$

Antiderivative was successfully verified.

```
[In] Int[ArcCot[E^x]/E^x,x]
```

```
[Out] -x - ArcCot[E^x]/E^x + Log[1 + E^(2*x)]/2
```

Rule 29

```
Int[(x_)^(-1), x_Symbol] :> Simp[Log[x], x]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
 x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 2194

```
Int[((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.), x_Symbol] :> Simp[(F^(c*(a +
 b*x)))^n/(b*c*n*Log[F]), x] /; FreeQ[{F, a, b, c, n}, x]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] && !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] && !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 5208

```
Int[((a_.) + ArcCot[u_]*(b_.))*(v_), x_Symbol] :> With[{w = IntHide[v, x]},
 Dist[a + b*ArcCot[u], w, x] + Dist[b, Int[SimplifyIntegrand[(w*D[u, x])/(1
 + u^2), x], x], x] /; InverseFunctionFreeQ[w, x]] /; FreeQ[{a, b}, x] && I
nverseFunctionFreeQ[u, x] && !MatchQ[v, ((c_.) + (d_.)*x)^(m_.) /; FreeQ[{
c, d, m}, x]] && FalseQ[FunctionOfLinear[v*(a + b*ArcCot[u]), x]]
```

Rubi steps

$$\begin{aligned}
\int e^{-x}\cot^{-1}(e^x)\,dx &= -e^{-x}\cot^{-1}(e^x) - \int \frac{1}{1+e^{2x}}\,dx \\
&= -e^{-x}\cot^{-1}(e^x) - \frac{1}{2}\,\text{Subst}\left(\int \frac{1}{x(1+x)}\,dx, x, e^{2x}\right) \\
&= -e^{-x}\cot^{-1}(e^x) - \frac{1}{2}\,\text{Subst}\left(\int \frac{1}{x}\,dx, x, e^{2x}\right) + \frac{1}{2}\,\text{Subst}\left(\int \frac{1}{1+x}\,dx, x, e^{2x}\right) \\
&= -x - e^{-x}\cot^{-1}(e^x) + \frac{1}{2}\log\left(1+e^{2x}\right)
\end{aligned}$$

Mathematica [A] time = 0.02, size = 27, normalized size = 1.00

$$-x + \frac{1}{2}\log\left(e^{2x}+1\right) - e^{-x}\cot^{-1}(e^x)$$

Antiderivative was successfully verified.

```
[In] Integrate[ArcCot[E^x]/E^x,x]
[Out] -x - ArcCot[E^x]/E^x + Log[1 + E^(2*x)]/2
```

fricas [A] time = 0.52, size = 28, normalized size = 1.04

$$-\frac{1}{2}\left(2\,xe^x - e^x\log\left(e^{(2\,x)}+1\right) + 2\,\text{arccot}\left(e^x\right)\right)e^{(-x)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(exp(x))/exp(x),x, algorithm="fricas")
[Out] -1/2*(2*x*e^x - e^x*log(e^(2*x) + 1) + 2*arccot(e^x))*e^(-x)
```

giac [A] time = 0.12, size = 21, normalized size = 0.78

$$-\arctan\left(e^{(-x)}\right)e^{(-x)} + \frac{1}{2}\log\left(e^{(-2\,x)}+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(exp(x))/exp(x),x, algorithm="giac")
[Out] -arctan(e^(-x))*e^(-x) + 1/2*log(e^(-2*x) + 1)
```

maple [A] time = 0.04, size = 25, normalized size = 0.93

$$-\text{arccot}\left(e^x\right)e^{-x} - \ln\left(e^x\right) + \frac{\ln\left(1+e^{2x}\right)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(arccot(exp(x))/exp(x),x)
[Out] -arccot(exp(x))/exp(x)-ln(exp(x))+1/2*ln(exp(x)^2+1)
```

maxima [A] time = 0.34, size = 19, normalized size = 0.70

$$-\,\text{arccot}\left(e^x\right)e^{(-x)} + \frac{1}{2}\log\left(e^{(-2\,x)}+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(arccot(exp(x))/exp(x),x, algorithm="maxima")
```

```
[Out] -arccot(e^x)*e^(-x) + 1/2*log(e^(-2*x) + 1)
```

mupad [B] time = 0.09, size = 22, normalized size = 0.81

$$\frac{\ln\left(e^{2x}+1\right)}{2} - x - \operatorname{acot}\left(e^{x}\right)\, e^{-x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(acot(exp(x))*exp(-x),x)
```

```
[Out] log(exp(2*x) + 1)/2 - x - acot(exp(x))*exp(-x)
```

sympy [A] time = 6.09, size = 19, normalized size = 0.70

$$-x + \frac{\log\left(e^{2x}+1\right)}{2} - e^{-x}\operatorname{acot}\left(e^{x}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(acot(exp(x))/exp(x),x)
```

```
[Out] -x + log(exp(2*x) + 1)/2 - exp(-x)*acot(exp(x))
```

3.228 $\int \frac{1}{(a+ax^2)(b-2b\cot^{-1}(x))}\,dx$

Optimal. Leaf size=17

$$\frac{\log\left(1-2\cot^{-1}(x)\right)}{2ab}$$

```
[Out] 1/2*ln(1-2*arccot(x))/a/b
```

Rubi [A] time = 0.04, antiderivative size = 17, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.053, Rules used = {4883}

$$\frac{\log\left(1-2\cot^{-1}(x)\right)}{2ab}$$

Antiderivative was successfully verified.

```
[In] Int[1/((a + a*x^2)*(b - 2*b*ArcCot[x])),x]
```

```
[Out] Log[1 - 2*ArcCot[x]]/(2*a*b)
```

Rule 4883

```
Int[1/(((a_.) + ArcCot[(c_.)*(x_)]*(b_.))*((d_) + (e_.)*(x_)^2)), x_Symbol]
 :> -Simp[Log[RemoveContent[a + b*ArcCot[c*x], x]]/(b*c*d), x] /; FreeQ[{a,
 b, c, d, e}, x] && EqQ[e, c^2*d]
```

Rubi steps

$$\int \frac{1}{\left(a+ax^2\right)\left(b-2b\cot^{-1}(x)\right)}\,dx=\frac{\log\left(1-2\cot^{-1}(x)\right)}{2ab}$$

Mathematica [A] time = 0.05, size = 17, normalized size = 1.00

$$\frac{\log\left(2\cot^{-1}(x)-1\right)}{2ab}$$

Antiderivative was successfully verified.

```
[In] Integrate[1/((a + a*x^2)*(b - 2*b*ArcCot[x])),x]
```

```
[Out] Log[-1 + 2*ArcCot[x]]/(2*a*b)
```

fricas [A] time = 0.64, size = 15, normalized size = 0.88

$$\frac{\log\left(2\,\operatorname{arccot}(x)-1\right)}{2\,ab}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a*x^2+a)/(b-2*b*arccot(x)),x, algorithm="fricas")
```

```
[Out] 1/2*log(2*arccot(x) - 1)/(a*b)
```

giac [A] time = 0.11, size = 18, normalized size = 1.06

$$\frac{\log\left(\left|2\,\arctan\left(\frac{1}{x}\right)-1\right|\right)}{2\,ab}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a*x^2+a)/(b-2*b*arccot(x)),x, algorithm="giac")
```

```
[Out] 1/2*log(abs(2*arctan(1/x) - 1))/(a*b)
```

maple [A] time = 0.10, size = 19, normalized size = 1.12

$$\frac{\ln(2b\operatorname{arccot}(x)-b)}{2ab}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a*x^2+a)/(b-2*b*arccot(x)),x)
```

```
[Out] 1/2/a*ln(2*b*arccot(x)-b)/b
```

maxima [A] time = 0.36, size = 17, normalized size = 1.00

$$\frac{\log\left(|2\arctan(1,x)-1|\right)}{2ab}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a*x^2+a)/(b-2*b*arccot(x)),x, algorithm="maxima")
```

```
[Out] 1/2*log(abs(2*arctan2(1, x) - 1))/(a*b)
```

mupad [B] time = 0.13, size = 15, normalized size = 0.88

$$\frac{\ln(2\operatorname{acot}(x)-1)}{2ab}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/((a + a*x^2)*(b - 2*b*acot(x))),x)
```

```
[Out] log(2*acot(x) - 1)/(2*a*b)
```

sympy [A] time = 0.53, size = 12, normalized size = 0.71

$$\frac{\log\left(\operatorname{acot}(x)-\frac{1}{2}\right)}{2ab}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a*x**2+a)/(b-2*b*acot(x)),x)
```

```
[Out] log(acot(x) - 1/2)/(2*a*b)
```

3.229 $\int e^{c(a+bx)} \cot^{-1}(\sinh(ac+bcx))\,dx$

Optimal. Leaf size=47

$$\frac{\log\left(e^{2c(a+bx)}+1\right)}{bc}+\frac{e^{ac+bcx}\cot^{-1}(\sinh(c(a+bx)))}{bc}$$

```
[Out] exp(b*c*x+a*c)*arccot(sinh(c*(b*x+a)))/b/c+ln(1+exp(2*c*(b*x+a)))/b/c
```

Rubi [A] time = 0.07, antiderivative size = 47, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {2194, 5208, 2282, 12, 260}

$$\frac{\log\left(e^{2c(a+bx)}+1\right)}{bc}+\frac{e^{ac+bcx}\cot^{-1}(\sinh(c(a+bx)))}{bc}$$

Antiderivative was successfully verified.

```
[In] Int[E^(c*(a + b*x))*ArcCot[Sinh[a*c + b*c*x]],x]
```

```
[Out] (E^(a*c + b*c*x)*ArcCot[Sinh[c*(a + b*x)]])/(b*c) + Log[1 + E^(2*c*(a + b*x
))]/(b*c)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 2194

```
Int[((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.), x_Symbol] :> Simp[(F^(c*(a +
 b*x)))^n/(b*c*n*Log[F]), x] /; FreeQ[{F, a, b, c, n}, x]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 5208

```
Int[((a_.) + ArcCot[u_]*(b_.))*(v_), x_Symbol] :> With[{w = IntHide[v, x]},
 Dist[a + b*ArcCot[u], w, x] + Dist[b, Int[SimplifyIntegrand[(w*D[u, x])/(1
 + u^2), x], x], x] /; InverseFunctionFreeQ[w, x]] /; FreeQ[{a, b}, x] && I
nverseFunctionFreeQ[u, x] &&  !MatchQ[v, ((c_.) + (d_.)*x)^(m_.) /; FreeQ[{
c, d, m}, x]] && FalseQ[FunctionOfLinear[v*(a + b*ArcCot[u]), x]]
```

Rubi steps

$$\int e^{c(a+bx)}\cot^{-1}(\sinh(ac+bcx))\,dx = \frac{\text{Subst}\left(\int e^x\cot^{-1}(\sinh(x))\,dx, x, ac+bcx\right)}{bc}$$
$$= \frac{e^{ac+bcx}\cot^{-1}(\sinh(c(a+bx)))}{bc} + \frac{\text{Subst}\left(\int e^x\text{sech}(x)\,dx, x, ac+bcx\right)}{bc}$$
$$= \frac{e^{ac+bcx}\cot^{-1}(\sinh(c(a+bx)))}{bc} + \frac{\text{Subst}\left(\int \frac{2x}{1+x^2}\,dx, x, e^{ac+bcx}\right)}{bc}$$
$$= \frac{e^{ac+bcx}\cot^{-1}(\sinh(c(a+bx)))}{bc} + \frac{2\,\text{Subst}\left(\int \frac{x}{1+x^2}\,dx, x, e^{ac+bcx}\right)}{bc}$$
$$= \frac{e^{ac+bcx}\cot^{-1}(\sinh(c(a+bx)))}{bc} + \frac{\log\left(1+e^{2c(a+bx)}\right)}{bc}$$

Mathematica [A] time = 0.11, size = 61, normalized size = 1.30

$$\frac{\log\left(e^{2c(a+bx)}+1\right) - e^{c(a+bx)}\cot^{-1}\left(\frac{1}{2}e^{-c(a+bx)} - \frac{1}{2}e^{c(a+bx)}\right)}{bc}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[E^(c*(a + b*x))*ArcCot[Sinh[a*c + b*c*x]],x]
```

```
[Out] (-(E^(c*(a + b*x))*ArcCot[1/(2*E^(c*(a + b*x))) - E^(c*(a + b*x))/2]) + Log
[1 + E^(2*c*(a + b*x))])/(b*c)
```

fricas [B] time = 0.62, size = 131, normalized size = 2.79

$$\frac{(\cosh(bcx+ac)+\sinh(bcx+ac))\arctan\left(\frac{2(\cosh(bcx+ac)+\sinh(bcx+ac))}{\cosh(bcx+ac)^2+2\cosh(bcx+ac)\sinh(bcx+ac)+\sinh(bcx+ac)^2-1}\right) + \log\left(\frac{2\cosh(\cdots}{\cosh(bcx+ac)-\cdots}\right.}{bc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(c*(b*x+a))*arccot(sinh(b*c*x+a*c)),x, algorithm="fricas")
```

```
[Out] ((cosh(b*c*x + a*c) + sinh(b*c*x + a*c))*arctan(2*(cosh(b*c*x + a*c) + sinh
(b*c*x + a*c))/(cosh(b*c*x + a*c)^2 + 2*cosh(b*c*x + a*c)*sinh(b*c*x + a*c)
 + sinh(b*c*x + a*c)^2 - 1)) + log(2*cosh(b*c*x + a*c)/(cosh(b*c*x + a*c) -
 sinh(b*c*x + a*c))))/(b*c)
```

giac [A] time = 0.13, size = 66, normalized size = 1.40

$$\frac{\left(\arctan\left(\frac{2}{e^{(bcx+ac)}-e^{(-bcx-ac)}}\right)e^{(bcx)} + e^{(-ac)}\log\left(e^{(2bcx+2ac)}+1\right)\right)e^{(ac)}}{bc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(c*(b*x+a))*arccot(sinh(b*c*x+a*c)),x, algorithm="giac")
```

```
[Out] (arctan(2/(e^(b*c*x + a*c) - e^(-b*c*x - a*c)))*e^(b*c*x) + e^(-a*c)*log(e^
(2*b*c*x + 2*a*c) + 1))*e^(a*c)/(b*c)
```

maple [C] time = 0.52, size = 1281, normalized size = 27.26

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(exp(c*(b*x+a))*arccot(sinh(b*c*x+a*c)),x)
```

```
[Out] ln(1+exp(2*c*(b*x+a)))/b/c-I/b/c*exp(c*(b*x+a))*ln(exp(c*(b*x+a))+I)+1/4/b/
c*Pi*csgn(I*(exp(c*(b*x+a))+I)^2)*csgn(I*exp(-c*(b*x+a))*(exp(c*(b*x+a))+I)
^2)^2*exp(c*(b*x+a))+1/4/b/c*Pi*csgn(I*exp(-c*(b*x+a)))*csgn(I*exp(-c*(b*x+
a))*(exp(c*(b*x+a))+I)^2)^2*exp(c*(b*x+a))-1/4/b/c*Pi*csgn(I*(exp(c*(b*x+a)
)+I))^2*csgn(I*(exp(c*(b*x+a))+I)^2)*exp(c*(b*x+a))+1/4/b/c*Pi*csgn(I*exp(-
c*(b*x+a))*(exp(c*(b*x+a))+I)^2)*csgn(exp(-c*(b*x+a))*(exp(c*(b*x+a))+I)^2)
^2*exp(c*(b*x+a))+1/4/b/c*Pi*csgn(I*(exp(c*(b*x+a))-I))^2*csgn(I*(exp(c*(b*
x+a))-I)^2)*exp(c*(b*x+a))-1/4/b/c*Pi*csgn(I*(exp(c*(b*x+a))-I)^2)*csgn(I*e
xp(-c*(b*x+a))*(exp(c*(b*x+a))-I)^2)^2*exp(c*(b*x+a))-1/4/b/c*Pi*csgn(I*exp
(-c*(b*x+a)))*csgn(I*exp(-c*(b*x+a))*(exp(c*(b*x+a))-I)^2)^2*exp(c*(b*x+a))
-1/4/b/c*Pi*csgn(I*exp(-c*(b*x+a))*(exp(c*(b*x+a))-I)^2)*csgn(exp(-c*(b*x+a
))*(exp(c*(b*x+a))-I)^2)^2*exp(c*(b*x+a))-1/4/b/c*Pi*csgn(I*exp(-c*(b*x+a))
*(exp(c*(b*x+a))+I)^2)*csgn(exp(-c*(b*x+a))*(exp(c*(b*x+a))+I)^2)*exp(c*(b*
x+a))+1/4/b/c*Pi*csgn(I*exp(-c*(b*x+a))*(exp(c*(b*x+a))-I)^2)*csgn(exp(-c*(
b*x+a))*(exp(c*(b*x+a))-I)^2)*exp(c*(b*x+a))-1/2/b/c*Pi*csgn(I*(exp(c*(b*x+
a))-I))*csgn(I*(exp(c*(b*x+a))-I)^2)^2*exp(c*(b*x+a))+1/2/b/c*Pi*csgn(I*(ex
p(c*(b*x+a))+I))*csgn(I*(exp(c*(b*x+a))+I)^2)^2*exp(c*(b*x+a))-1/4/b/c*Pi*c
sgn(I*(exp(c*(b*x+a))+I)^2)*csgn(I*exp(-c*(b*x+a)))*csgn(I*exp(-c*(b*x+a))*
(exp(c*(b*x+a))+I)^2)*exp(c*(b*x+a))+1/4/b/c*Pi*csgn(I*(exp(c*(b*x+a))-I)^2
)*csgn(I*exp(-c*(b*x+a)))*csgn(I*exp(-c*(b*x+a))*(exp(c*(b*x+a))-I)^2)*exp(
c*(b*x+a))-2*a/b-1/4/b/c*Pi*csgn(exp(-c*(b*x+a))*(exp(c*(b*x+a))+I)^2)^3*ex
p(c*(b*x+a))-1/4/b/c*Pi*csgn(I*exp(-c*(b*x+a))*(exp(c*(b*x+a))+I)^2)^3*exp(
c*(b*x+a))+1/4/b/c*Pi*csgn(I*(exp(c*(b*x+a))-I)^2)^3*exp(c*(b*x+a))-1/4/b/c
*Pi*csgn(I*(exp(c*(b*x+a))+I)^2)^3*exp(c*(b*x+a))+1/4/b/c*Pi*csgn(I*exp(-c*
(b*x+a))*(exp(c*(b*x+a))-I)^2)^3*exp(c*(b*x+a))-1/4/b/c*Pi*csgn(exp(-c*(b*x
+a))*(exp(c*(b*x+a))-I)^2)^3*exp(c*(b*x+a))+1/4/b/c*Pi*csgn(exp(-c*(b*x+a))
*(exp(c*(b*x+a))+I)^2)^2*exp(c*(b*x+a))+1/4/b/c*Pi*csgn(exp(-c*(b*x+a))*(ex
p(c*(b*x+a))-I)^2)^2*exp(c*(b*x+a))+I/b/c*exp(c*(b*x+a))*ln(exp(c*(b*x+a))-
I)
```

maxima [A] time = 0.44, size = 47, normalized size = 1.00

$$\frac{\operatorname{arccot}(\sinh(bcx+ac))\, e^{((bx+a)c)}}{bc} + \frac{\log\left(e^{(2\,bcx+2\,ac)}+1\right)}{bc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(c*(b*x+a))*arccot(sinh(b*c*x+a*c)),x, algorithm="maxima")
```

```
[Out] arccot(sinh(b*c*x + a*c))*e^((b*x + a)*c)/(b*c) + log(e^(2*b*c*x + 2*a*c) +
 1)/(b*c)
```

mupad [B] time = 0.73, size = 65, normalized size = 1.38

$$\frac{\ln\left(\mathrm{e}^{2\,b\,c\,x}\,\mathrm{e}^{2\,a\,c}+1\right)}{b\,c} + \frac{\mathrm{e}^{b\,c\,x}\,\mathrm{e}^{a\,c}\,\mathrm{acot}\left(\frac{\mathrm{e}^{b\,c\,x}\,\mathrm{e}^{a\,c}}{2}-\frac{\mathrm{e}^{-b\,c\,x}\,\mathrm{e}^{-a\,c}}{2}\right)}{b\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(exp(c*(a + b*x))*acot(sinh(a*c + b*c*x)),x)
```

```
[Out] log(exp(2*b*c*x)*exp(2*a*c) + 1)/(b*c) + (exp(b*c*x)*exp(a*c)*acot((exp(b*c
*x)*exp(a*c))/2 - (exp(-b*c*x)*exp(-a*c))/2))/(b*c)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(c*(b*x+a))*acot(sinh(b*c*x+a*c)),x)
```

```
[Out] Timed out
```

3.230 $\int e^{c(a+bx)} \cot^{-1}(\cosh(ac+bcx))\,dx$

Optimal. Leaf size=103

$$\frac{\left(1-\sqrt{2}\right)\log\left(e^{2c(a+bx)}+3-2\sqrt{2}\right)}{2bc}+\frac{\left(1+\sqrt{2}\right)\log\left(e^{2c(a+bx)}+3+2\sqrt{2}\right)}{2bc}+\frac{e^{ac+bcx}\cot^{-1}(\cosh(c(a+bx)))}{bc}$$

```
[Out] exp(b*c*x+a*c)*arccot(cosh(c*(b*x+a)))/b/c+1/2*ln(3+exp(2*c*(b*x+a))-2*2^(1
/2))*(1-2^(1/2))/b/c+1/2*ln(3+exp(2*c*(b*x+a))+2*2^(1/2))*(1+2^(1/2))/b/c
```

Rubi [A] time = 0.14, antiderivative size = 103, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 7, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.350, Rules used = {2194, 5208, 2282, 12, 1247, 632, 31}

$$\frac{\left(1-\sqrt{2}\right)\log\left(e^{2c(a+bx)}+3-2\sqrt{2}\right)}{2bc}+\frac{\left(1+\sqrt{2}\right)\log\left(e^{2c(a+bx)}+3+2\sqrt{2}\right)}{2bc}+\frac{e^{ac+bcx}\cot^{-1}(\cosh(c(a+bx)))}{bc}$$

Antiderivative was successfully verified.

```
[In] Int[E^(c*(a + b*x))*ArcCot[Cosh[a*c + b*c*x]],x]
```

```
[Out] (E^(a*c + b*c*x)*ArcCot[Cosh[c*(a + b*x)]])/(b*c) + ((1 - Sqrt[2])*Log[3 -
2*Sqrt[2] + E^(2*c*(a + b*x))])/(2*b*c) + ((1 + Sqrt[2])*Log[3 + 2*Sqrt[2]
+ E^(2*c*(a + b*x))])/(2*b*c)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 632

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> W
ith[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(c*d - e*(b/2 - q/2))/q, Int[1/(b/2 - q/
2 + c*x), x], x] - Dist[(c*d - e*(b/2 + q/2))/q, Int[1/(b/2 + q/2 + c*x), x
], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[2*c*d - b*e, 0] && NeQ[b^2 - 4*a
*c, 0] && NiceSqrtQ[b^2 - 4*a*c]
```

Rule 1247

```
Int[(x_)*((d_) + (e_.)*(x_)^2)^(q_.)*((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4)^(
p_.), x_Symbol] :> Dist[1/2, Subst[Int[(d + e*x)^q*(a + b*x + c*x^2)^p, x],
 x, x^2], x] /; FreeQ[{a, b, c, d, e, p, q}, x]
```

Rule 2194

```
Int[((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.), x_Symbol] :> Simp[(F^(c*(a +
 b*x)))^n/(b*c*n*Log[F]), x] /; FreeQ[{F, a, b, c, n}, x]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
```

```
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 5208

```
Int[((a_.) + ArcCot[u_]*(b_.))*(v_), x_Symbol] :> With[{w = IntHide[v, x]},
 Dist[a + b*ArcCot[u], w, x] + Dist[b, Int[SimplifyIntegrand[(w*D[u, x])/(1
 + u^2), x], x], x] /; InverseFunctionFreeQ[w, x]] /; FreeQ[{a, b}, x] && I
nverseFunctionFreeQ[u, x] &&  !MatchQ[v, ((c_.) + (d_.)*x)^(m_.) /; FreeQ[{
c, d, m}, x]] && FalseQ[FunctionOfLinear[v*(a + b*ArcCot[u]), x]]
```

Rubi steps

$$\begin{aligned}
\int e^{c(a+bx)} \cot^{-1}(\cosh(ac+bcx))\,dx &= \frac{\operatorname{Subst}\left(\int e^x \cot^{-1}(\cosh(x))\,dx, x, ac+bcx\right)}{bc} \\
&= \frac{e^{ac+bcx}\cot^{-1}(\cosh(c(a+bx)))}{bc} + \frac{\operatorname{Subst}\left(\int \frac{e^x \sinh(x)}{1+\cosh^2(x)}\,dx, x, ac+bcx\right)}{bc} \\
&= \frac{e^{ac+bcx}\cot^{-1}(\cosh(c(a+bx)))}{bc} + \frac{\operatorname{Subst}\left(\int \frac{2x\left(-1+x^2\right)}{1+6x^2+x^4}\,dx, x, e^{ac+bcx}\right)}{bc} \\
&= \frac{e^{ac+bcx}\cot^{-1}(\cosh(c(a+bx)))}{bc} + \frac{2\operatorname{Subst}\left(\int \frac{x\left(-1+x^2\right)}{1+6x^2+x^4}\,dx, x, e^{ac+bcx}\right)}{bc} \\
&= \frac{e^{ac+bcx}\cot^{-1}(\cosh(c(a+bx)))}{bc} + \frac{\operatorname{Subst}\left(\int \frac{-1+x}{1+6x+x^2}\,dx, x, e^{2ac+2bcx}\right)}{bc} \\
&= \frac{e^{ac+bcx}\cot^{-1}(\cosh(c(a+bx)))}{bc} + \frac{\left(1-\sqrt{2}\right)\operatorname{Subst}\left(\int \frac{1}{3-2\sqrt{2}+x}\,dx, x, e^{2ac+2bcx}\right.}{2bc} \\
&= \frac{e^{ac+bcx}\cot^{-1}(\cosh(c(a+bx)))}{bc} + \frac{\left(1-\sqrt{2}\right)\log\left(3-2\sqrt{2}+e^{2ac+2bcx}\right)}{2bc} + \frac{(1}{}
\end{aligned}$$

Mathematica [C] time = 0.15, size = 146, normalized size = 1.42

$$\frac{\operatorname{RootSum}\left[\#1^4+6\#1^2+1\&, \frac{7\#1^2\log\left(e^{c(a+bx)}-\#1\right)-7\#1^2ac-7\#1^2bcx+\log\left(e^{c(a+bx)}-\#1\right)-ac-bcx}{3\#1^2+1}\&\right]+4c(a+bx)+2e^{c(a+bx)}\cot^{-1}}{2bc}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[E^(c*(a + b*x))*ArcCot[Cosh[a*c + b*c*x]],x]
```

```
[Out] (4*c*(a + b*x) + 2*E^(c*(a + b*x))*ArcCot[(1 + E^(2*c*(a + b*x)))/(2*E^(c*(
a + b*x)))] + RootSum[1 + 6*#1^2 + #1^4 & , (-(a*c) - b*c*x + Log[E^(c*(a +
 b*x)) - #1] - 7*a*c*#1^2 - 7*b*c*x*#1^2 + 7*Log[E^(c*(a + b*x)) - #1]*#1^2
)/(1 + 3*#1^2) & ])/(2*b*c)
```

fricas [B] time = 0.67, size = 276, normalized size = 2.68

$$\frac{2\left(\cosh(bcx+ac)+\sinh(bcx+ac)\right)\arctan\left(\frac{2\left(\cosh(bcx+ac)+\sinh(bcx+ac)\right)}{\cosh(bcx+ac)^2+2\cosh(bcx+ac)\sinh(bcx+ac)+\sinh(bcx+ac)^2+1}\right)+\sqrt{2}\log\left(\frac{3\left(2\sqrt{2}\right.}{}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(c*(b*x+a))*arccot(cosh(b*c*x+a*c)),x, algorithm="fricas")
```

```
[Out] 1/2*(2*(cosh(b*c*x + a*c) + sinh(b*c*x + a*c))*arctan(2*(cosh(b*c*x + a*c)
+ sinh(b*c*x + a*c))/(cosh(b*c*x + a*c)^2 + 2*cosh(b*c*x + a*c)*sinh(b*c*x
+ a*c) + sinh(b*c*x + a*c)^2 + 1)) + sqrt(2)*log((3*(2*sqrt(2) + 3)*cosh(b*
c*x + a*c)^2 - 4*(3*sqrt(2) + 4)*cosh(b*c*x + a*c)*sinh(b*c*x + a*c) + 3*(2
*sqrt(2) + 3)*sinh(b*c*x + a*c)^2 + 2*sqrt(2) + 3)/(cosh(b*c*x + a*c)^2 + s
inh(b*c*x + a*c)^2 + 3)) + log(2*(cosh(b*c*x + a*c)^2 + sinh(b*c*x + a*c)^2
 + 3)/(cosh(b*c*x + a*c)^2 - 2*cosh(b*c*x + a*c)*sinh(b*c*x + a*c) + sinh(b
*c*x + a*c)^2)))/(b*c)
```

giac [A] time = 0.14, size = 154, normalized size = 1.50

$$-\frac{\left(\sqrt{2}\,e^{(-ac)}\log\left(-\frac{2\sqrt{2}\,e^{(2\,ac)}-e^{(2\,bcx+4\,ac)}-3\,e^{(2\,ac)}}{2\sqrt{2}\,e^{(2\,ac)}+e^{(2\,bcx+4\,ac)}+3\,e^{(2\,ac)}}\right)-2\,\arctan\left(\frac{2}{e^{(bcx+ac)}+e^{(-bcx-ac)}}\right)e^{(bcx)}-e^{(-ac)}\log\left(e^{(4\,bcx+4\,ac)}+6\,e^{(2\,bc}\right.\right.}{2\,bc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(c*(b*x+a))*arccot(cosh(b*c*x+a*c)),x, algorithm="giac")
```

```
[Out] -1/2*(sqrt(2)*e^(-a*c)*log(-(2*sqrt(2)*e^(2*a*c) - e^(2*b*c*x + 4*a*c) - 3*
e^(2*a*c))/(2*sqrt(2)*e^(2*a*c) + e^(2*b*c*x + 4*a*c) + 3*e^(2*a*c))) - 2*a
rctan(2/(e^(b*c*x + a*c) + e^(-b*c*x - a*c)))*e^(b*c*x) - e^(-a*c)*log(e^(4
*b*c*x + 4*a*c) + 6*e^(2*b*c*x + 2*a*c) + 1))*e^(a*c)/(b*c)
```

maple [C] time = 0.72, size = 1358, normalized size = 13.18

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(exp(c*(b*x+a))*arccot(cosh(b*c*x+a*c)),x)
```

```
[Out] 1/2*I/b/c*exp(c*(b*x+a))*ln(exp(2*c*(b*x+a))+1-2*I*exp(c*(b*x+a)))-1/4/b/c*
Pi*csgn(exp(-c*(b*x+a))*(exp(2*c*(b*x+a))+1+2*I*exp(c*(b*x+a))))^3*exp(c*(b
*x+a))+1/4/b/c*Pi*csgn(I*exp(-c*(b*x+a))*(exp(2*c*(b*x+a))+1+2*I*exp(c*(b*x
+a))))*csgn(exp(-c*(b*x+a))*(exp(2*c*(b*x+a))+1+2*I*exp(c*(b*x+a))))^2*exp(
c*(b*x+a))+1/4/b/c*Pi*csgn(exp(-c*(b*x+a))*(-exp(2*c*(b*x+a))-1+2*I*exp(c*(
b*x+a))))^3*exp(c*(b*x+a))+1/4/b/c*Pi*csgn(I*exp(-c*(b*x+a))*(-exp(2*c*(b*x
+a))-1+2*I*exp(c*(b*x+a))))*csgn(exp(-c*(b*x+a))*(-exp(2*c*(b*x+a))-1+2*I*e
xp(c*(b*x+a))))^2*exp(c*(b*x+a))+1/4/b/c*Pi*csgn(I*exp(-c*(b*x+a)))*csgn(I*
(-exp(2*c*(b*x+a))-1+2*I*exp(c*(b*x+a))))*csgn(I*exp(-c*(b*x+a))*(-exp(2*c*
(b*x+a))-1+2*I*exp(c*(b*x+a))))*exp(c*(b*x+a))-1/4/b/c*Pi*csgn(I*exp(-c*(b*
x+a)))*csgn(I*(exp(2*c*(b*x+a))+1+2*I*exp(c*(b*x+a))))*csgn(I*exp(-c*(b*x+a
))*(exp(2*c*(b*x+a))+1+2*I*exp(c*(b*x+a))))*exp(c*(b*x+a))+1/4/b/c*Pi*csgn(
I*exp(-c*(b*x+a)))*csgn(I*exp(-c*(b*x+a))*(exp(2*c*(b*x+a))+1+2*I*exp(c*(b*
x+a))))^2*exp(c*(b*x+a))-1/4/b/c*Pi*csgn(I*exp(-c*(b*x+a)))*csgn(I*exp(-c*(
b*x+a))*(-exp(2*c*(b*x+a))-1+2*I*exp(c*(b*x+a))))^2*exp(c*(b*x+a))+1/4/b/c*
Pi*csgn(I*(-exp(2*c*(b*x+a))-1+2*I*exp(c*(b*x+a))))*csgn(I*exp(-c*(b*x+a))*
(-exp(2*c*(b*x+a))-1+2*I*exp(c*(b*x+a))))^2*exp(c*(b*x+a))+1/4/b/c*Pi*csgn(
I*(exp(2*c*(b*x+a))+1+2*I*exp(c*(b*x+a))))*csgn(I*exp(-c*(b*x+a))*(exp(2*c*
(b*x+a))+1+2*I*exp(c*(b*x+a))))^2*exp(c*(b*x+a))-1/4/b/c*Pi*csgn(I*exp(-c*(
b*x+a))*(exp(2*c*(b*x+a))+1+2*I*exp(c*(b*x+a))))^3*exp(c*(b*x+a))-1/4/b/c*P
i*csgn(I*exp(-c*(b*x+a))*(-exp(2*c*(b*x+a))-1+2*I*exp(c*(b*x+a))))^3*exp(c*
(b*x+a))+1/4/b/c*Pi*csgn(exp(-c*(b*x+a))*(exp(2*c*(b*x+a))+1+2*I*exp(c*(b*x
+a))))^2*exp(c*(b*x+a))-1/4/b/c*Pi*csgn(I*exp(-c*(b*x+a))*(exp(2*c*(b*x+a))
+1+2*I*exp(c*(b*x+a))))*csgn(exp(-c*(b*x+a))*(exp(2*c*(b*x+a))+1+2*I*exp(c*
(b*x+a))))*exp(c*(b*x+a))+1/4/b/c*Pi*csgn(exp(-c*(b*x+a))*(-exp(2*c*(b*x+a)
)-1+2*I*exp(c*(b*x+a))))^2*exp(c*(b*x+a))+1/4/b/c*Pi*csgn(I*exp(-c*(b*x+a))
*(-exp(2*c*(b*x+a))-1+2*I*exp(c*(b*x+a))))*csgn(exp(-c*(b*x+a))*(-exp(2*c*(
b*x+a))-1+2*I*exp(c*(b*x+a))))*exp(c*(b*x+a))-1/2*I/b/c*exp(c*(b*x+a))*ln(e
xp(2*c*(b*x+a))+1+2*I*exp(c*(b*x+a)))+1/2/b/c*ln(exp(2*c*(b*x+a))+(1+2^(1/2
))^2)*2^(1/2)-1/2/b/c*ln(exp(2*c*(b*x+a))+(2^(1/2)-1)^2)*2^(1/2)-2*a/b+1/2/
```

```
b/c*ln(exp(2*c*(b*x+a))+(1+2^(1/2))^2)+1/2/b/c*ln(exp(2*c*(b*x+a))+(2^(1/2)
-1)^2)
```

maxima [A] time = 0.45, size = 131, normalized size = 1.27

$$\frac{\operatorname{arccot}(\cosh(bcx+ac))e^{((bx+a)c)}}{bc}+\frac{\sqrt{2}\log\left(-\frac{2\sqrt{2}-e^{(-2bcx-2ac)}-3}{2\sqrt{2}+e^{(-2bcx-2ac)}+3}\right)}{2bc}+\frac{2(bcx+ac)}{bc}+\frac{\log\left(6e^{(-2bcx-2ac)}+e^{(-4bcx-4ac)}+\right.}{2bc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(c*(b*x+a))*arccot(cosh(b*c*x+a*c)),x, algorithm="maxima")
```

```
[Out] arccot(cosh(b*c*x + a*c))*e^((b*x + a)*c)/(b*c) + 1/2*sqrt(2)*log(-(2*sqrt(
2) - e^(-2*b*c*x - 2*a*c) - 3)/(2*sqrt(2) + e^(-2*b*c*x - 2*a*c) + 3))/(b*c
) + 2*(b*c*x + a*c)/(b*c) + 1/2*log(6*e^(-2*b*c*x - 2*a*c) + e^(-4*b*c*x -
4*a*c) + 1)/(b*c)
```

mupad [B] time = 0.86, size = 133, normalized size = 1.29

$$\frac{\ln\left(8e^{2c(a+bx)}-2\sqrt{2}-6\sqrt{2}e^{2c(a+bx)}\right)\left(\sqrt{2}+1\right)}{2bc}-\frac{\ln\left(8e^{2c(a+bx)}+2\sqrt{2}+6\sqrt{2}e^{2c(a+bx)}\right)\left(\sqrt{2}-1\right)}{2bc}+\frac{e^{ac+bcx}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(exp(c*(a + b*x))*acot(cosh(a*c + b*c*x)),x)
```

```
[Out] (log(8*exp(2*c*(a + b*x)) - 2*2^(1/2) - 6*2^(1/2)*exp(2*c*(a + b*x)))*(2^(1
/2) + 1))/(2*b*c) - (log(8*exp(2*c*(a + b*x)) + 2*2^(1/2) + 6*2^(1/2)*exp(2
*c*(a + b*x)))*(2^(1/2) - 1))/(2*b*c) + (exp(a*c + b*c*x)*acot((exp(b*c*x)*
exp(a*c))/2 + (exp(-b*c*x)*exp(-a*c))/2))/(b*c)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(c*(b*x+a))*acot(cosh(b*c*x+a*c)),x)
```

```
[Out] Timed out
```

3.231 $\int e^{c(a+bx)} \cot^{-1}(\tanh(ac+bcx))\,dx$

Optimal. Leaf size=180

$$\frac{\log\left(e^{2c(a+bx)}-\sqrt{2}\,e^{ac+bcx}+1\right)}{2\sqrt{2}\,bc}-\frac{\log\left(e^{2c(a+bx)}+\sqrt{2}\,e^{ac+bcx}+1\right)}{2\sqrt{2}\,bc}-\frac{\tan^{-1}\left(1-\sqrt{2}\,e^{ac+bcx}\right)}{\sqrt{2}\,bc}+\frac{\tan^{-1}\left(\sqrt{2}\,e^{ac+bcx}+1\right)}{\sqrt{2}\,bc}$$

```
[Out] exp(b*c*x+a*c)*arccot(tanh(c*(b*x+a)))/b/c+1/2*arctan(-1+exp(b*c*x+a*c)*2^(
1/2))/b/c*2^(1/2)+1/2*arctan(1+exp(b*c*x+a*c)*2^(1/2))/b/c*2^(1/2)+1/4*ln(1
+exp(2*c*(b*x+a))-exp(b*c*x+a*c)*2^(1/2))/b/c*2^(1/2)-1/4*ln(1+exp(2*c*(b*x
+a))+exp(b*c*x+a*c)*2^(1/2))/b/c*2^(1/2)
```

Rubi [A] time = 0.18, antiderivative size = 180, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 10, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.500$, Rules used = {2194, 5208, 12, 2249, 297, 1162, 617, 204, 1165, 628}

$$\frac{\log\left(e^{2c(a+bx)}-\sqrt{2}\,e^{ac+bcx}+1\right)}{2\sqrt{2}\,bc}-\frac{\log\left(e^{2c(a+bx)}+\sqrt{2}\,e^{ac+bcx}+1\right)}{2\sqrt{2}\,bc}-\frac{\tan^{-1}\left(1-\sqrt{2}\,e^{ac+bcx}\right)}{\sqrt{2}\,bc}+\frac{\tan^{-1}\left(\sqrt{2}\,e^{ac+bcx}+1\right)}{\sqrt{2}\,bc}$$

Antiderivative was successfully verified.

```
[In] Int[E^(c*(a + b*x))*ArcCot[Tanh[a*c + b*c*x]],x]
```

```
[Out] (E^(a*c + b*c*x)*ArcCot[Tanh[c*(a + b*x)]])/(b*c) - ArcTan[1 - Sqrt[2]*E^(a
*c + b*c*x)]/(Sqrt[2]*b*c) + ArcTan[1 + Sqrt[2]*E^(a*c + b*c*x)]/(Sqrt[2]*b
*c) + Log[1 + E^(2*c*(a + b*x)) - Sqrt[2]*E^(a*c + b*c*x)]/(2*Sqrt[2]*b*c)
- Log[1 + E^(2*c*(a + b*x)) + Sqrt[2]*E^(a*c + b*c*x)]/(2*Sqrt[2]*b*c)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 297

```
Int[(x_)^2/((a_) + (b_.)*(x_)^4), x_Symbol] :> With[{r = Numerator[Rt[a/b,
2]], s = Denominator[Rt[a/b, 2]]}, Dist[1/(2*s), Int[(r + s*x^2)/(a + b*x^4
), x], x] - Dist[1/(2*s), Int[(r - s*x^2)/(a + b*x^4), x], x]] /; FreeQ[{a,
 b}, x] && (GtQ[a/b, 0] || (PosQ[a/b] && AtomQ[SplitProduct[SumBaseQ, a]] &
& AtomQ[SplitProduct[SumBaseQ, b]]))
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 2194

```
Int[((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.), x_Symbol] :> Simp[(F^(c*(a +
 b*x)))^n/(b*c*n*Log[F]), x] /; FreeQ[{F, a, b, c, n}, x]
```

Rule 2249

```
Int[((a_) + (b_.)*(F_)^((e_.)*((c_.) + (d_.)*(x_))))^(p_.)*(G_)^((h_.)*((f_
.) + (g_.)*(x_))), x_Symbol] :> With[{m = FullSimplify[(d*e*Log[F])/(g*h*Lo
g[G])]}, Dist[Denominator[m]/(g*h*Log[G]), Subst[Int[x^(Denominator[m] - 1)
*(a + b*F^(c*e - (d*e*f)/g)*x^Numerator[m])^p, x], x, G^((h*(f + g*x))/Deno
minator[m])], x] /; LtQ[m, -1] || GtQ[m, 1]] /; FreeQ[{F, G, a, b, c, d, e,
 f, g, h, p}, x]
```

Rule 5208

```
Int[((a_.) + ArcCot[u_]*(b_.))*(v_), x_Symbol] :> With[{w = IntHide[v, x]},
 Dist[a + b*ArcCot[u], w, x] + Dist[b, Int[SimplifyIntegrand[(w*D[u, x])/(1
 + u^2), x], x], x] /; InverseFunctionFreeQ[w, x]] /; FreeQ[{a, b}, x] && I
nverseFunctionFreeQ[u, x] &&  !MatchQ[v, ((c_.) + (d_.)*x)^(m_.) /; FreeQ[{
c, d, m}, x]] && FalseQ[FunctionOfLinear[v*(a + b*ArcCot[u]), x]]
```

Rubi steps

$$\int e^{c(a+bx)}\cot^{-1}(\tanh(ac+bcx))\,dx = \frac{\text{Subst}\left(\int e^x\cot^{-1}(\tanh(x))\,dx,x,ac+bcx\right)}{bc}$$
$$= \frac{e^{ac+bcx}\cot^{-1}(\tanh(c(a+bx)))}{bc}+\frac{\text{Subst}\left(\int\frac{2e^{3x}}{1+e^{4x}}\,dx,x,ac+bcx\right)}{bc}$$
$$= \frac{e^{ac+bcx}\cot^{-1}(\tanh(c(a+bx)))}{bc}+\frac{2\,\text{Subst}\left(\int\frac{e^{3x}}{1+e^{4x}}\,dx,x,ac+bcx\right)}{bc}$$
$$= \frac{e^{ac+bcx}\cot^{-1}(\tanh(c(a+bx)))}{bc}+\frac{2\,\text{Subst}\left(\int\frac{x^2}{1+x^4}\,dx,x,e^{ac+bcx}\right)}{bc}$$
$$= \frac{e^{ac+bcx}\cot^{-1}(\tanh(c(a+bx)))}{bc}-\frac{\text{Subst}\left(\int\frac{1-x^2}{1+x^4}\,dx,x,e^{ac+bcx}\right)}{bc}+\frac{\text{Subst}\left(\int\right.}{}$$
$$= \frac{e^{ac+bcx}\cot^{-1}(\tanh(c(a+bx)))}{bc}+\frac{\text{Subst}\left(\int\frac{1}{1-\sqrt{2}x+x^2}\,dx,x,e^{ac+bcx}\right)}{2bc}+\frac{\text{Su}}{}$$
$$= \frac{e^{ac+bcx}\cot^{-1}(\tanh(c(a+bx)))}{bc}+\frac{\log\left(1-\sqrt{2}e^{ac+bcx}+e^{2ac+2bcx}\right)}{2\sqrt{2}bc}-\frac{\log\left(\right.}{}$$
$$= \frac{e^{ac+bcx}\cot^{-1}(\tanh(c(a+bx)))}{bc}-\frac{\tan^{-1}\left(1-\sqrt{2}e^{ac+bcx}\right)}{\sqrt{2}bc}+\frac{\tan^{-1}\left(1+\sqrt{2}\right.}{\sqrt{2}bc}$$

Mathematica [C] time = 0.12, size = 89, normalized size = 0.49

$$\frac{\text{RootSum}\left[\#1^4+1\&,\frac{\log\left(e^{c(a+bx)}-\#1\right)-ac-bcx}{\#1}\&\right]+2e^{c(a+bx)}\cot^{-1}\left(\frac{e^{2c(a+bx)}-1}{e^{2c(a+bx)}+1}\right)}{2bc}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[E^(c*(a + b*x))*ArcCot[Tanh[a*c + b*c*x]],x]
```

```
[Out] (2*E^(c*(a + b*x))*ArcCot[(-1 + E^(2*c*(a + b*x)))/(1 + E^(2*c*(a + b*x)))]
 + RootSum[1 + #1^4 & , (-(a*c) - b*c*x + Log[E^(c*(a + b*x)) - #1])/#1 & ]
)/(2*b*c)
```

fricas [B] time = 0.71, size = 431, normalized size = 2.39

$$-\frac{4\sqrt{2}bc\left(\frac{1}{b^4c^4}\right)^{\frac{1}{4}}\arctan\left(-\sqrt{2}bc\left(\frac{1}{b^4c^4}\right)^{\frac{1}{4}}e^{(bcx+ac)}+\sqrt{2}\sqrt{\sqrt{2}b^3c^3\left(\frac{1}{b^4c^4}\right)^{\frac{3}{4}}e^{(bcx+ac)}+b^2c^2\sqrt{\frac{1}{b^4c^4}}+e^{(2\,bcx+2\,ac)}}\,bc\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(c*(b*x+a))*arccot(tanh(b*c*x+a*c)),x, algorithm="fricas")
```

```
[Out] -1/4*(4*sqrt(2)*b*c*(1/(b^4*c^4))^(1/4)*arctan(-sqrt(2)*b*c*(1/(b^4*c^4))^(
1/4)*e^(b*c*x + a*c) + sqrt(2)*sqrt(sqrt(2)*b^3*c^3*(1/(b^4*c^4))^(3/4)*e^(
b*c*x + a*c) + b^2*c^2*sqrt(1/(b^4*c^4)) + e^(2*b*c*x + 2*a*c))*b*c*(1/(b^4
*c^4))^(1/4) - 1) + 4*sqrt(2)*b*c*(1/(b^4*c^4))^(1/4)*arctan(-sqrt(2)*b*c*(
1/(b^4*c^4))^(1/4)*e^(b*c*x + a*c) + sqrt(2)*sqrt(-sqrt(2)*b^3*c^3*(1/(b^4*
c^4))^(3/4)*e^(b*c*x + a*c) + b^2*c^2*sqrt(1/(b^4*c^4)) + e^(2*b*c*x + 2*a*
c))*b*c*(1/(b^4*c^4))^(1/4) + 1) + sqrt(2)*b*c*(1/(b^4*c^4))^(1/4)*log(sqrt
(2)*b^3*c^3*(1/(b^4*c^4))^(3/4)*e^(b*c*x + a*c) + b^2*c^2*sqrt(1/(b^4*c^4))
 + e^(2*b*c*x + 2*a*c)) - sqrt(2)*b*c*(1/(b^4*c^4))^(1/4)*log(-sqrt(2)*b^3*
```

```
c^3*(1/(b^4*c^4))^(3/4)*e^(b*c*x + a*c) + b^2*c^2*sqrt(1/(b^4*c^4)) + e^(2*
b*c*x + 2*a*c)) - 4*arctan((e^(2*b*c*x + 2*a*c) + 1)/(e^(2*b*c*x + 2*a*c) -
 1))*e^(b*c*x + a*c))/(b*c)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$sage_0x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(c*(b*x+a))*arccot(tanh(b*c*x+a*c)),x, algorithm="giac")
```

```
[Out] sage0*x
```

maple [C] time = 1.74, size = 1323, normalized size = 7.35

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(exp(c*(b*x+a))*arccot(tanh(b*c*x+a*c)),x)
```

```
[Out] -1/4/b/c*Pi*csgn((1-I)*(exp(2*c*(b*x+a))-I)/(1+exp(2*c*(b*x+a))))^3*exp(c*(
b*x+a))-1/4/b/c*Pi*csgn(I*(exp(2*c*(b*x+a))+I)/(1+exp(2*c*(b*x+a))))^3*exp(
c*(b*x+a))-1/4*I/b/c*ln(exp(c*(b*x+a))+(1/2-1/2*I)*2^(1/2))*2^(1/2)-1/4*I/b
/c*ln(exp(c*(b*x+a))-(1/2+1/2*I)*2^(1/2))*2^(1/2)+1/4*I/b/c*ln(exp(c*(b*x+a
))+(-1/2+1/2*I)*2^(1/2))*2^(1/2)+1/4*I/b/c*ln(exp(c*(b*x+a))+(1/2+1/2*I)*2^
(1/2))*2^(1/2)+1/4/b/c*Pi*csgn(I*(exp(2*c*(b*x+a))-I)/(1+exp(2*c*(b*x+a))))
*csgn((1-I)*(exp(2*c*(b*x+a))-I)/(1+exp(2*c*(b*x+a))))*exp(c*(b*x+a))+1/4/b
/c*Pi*csgn(I*(exp(2*c*(b*x+a))+I)/(1+exp(2*c*(b*x+a))))*csgn((1+I)*(exp(2*c
*(b*x+a))+I)/(1+exp(2*c*(b*x+a))))^2*exp(c*(b*x+a))-1/4/b/c*Pi*csgn(I*(exp(
2*c*(b*x+a))-I)/(1+exp(2*c*(b*x+a))))*csgn((1-I)*(exp(2*c*(b*x+a))-I)/(1+ex
p(2*c*(b*x+a))))^2*exp(c*(b*x+a))-1/4/b/c*Pi*csgn(I*(exp(2*c*(b*x+a))-I))*c
sgn(I*(exp(2*c*(b*x+a))-I)/(1+exp(2*c*(b*x+a))))^2*exp(c*(b*x+a))+1/4/b/c*P
i*csgn(I/(1+exp(2*c*(b*x+a))))*csgn(I*(exp(2*c*(b*x+a))+I)/(1+exp(2*c*(b*x+
a))))^2*exp(c*(b*x+a))-1/4/b/c*Pi*csgn(I/(1+exp(2*c*(b*x+a))))*csgn(I*(exp(
2*c*(b*x+a))-I)/(1+exp(2*c*(b*x+a))))^2*exp(c*(b*x+a))+1/4/b/c*Pi*csgn(I*(e
xp(2*c*(b*x+a))+I))*csgn(I*(exp(2*c*(b*x+a))+I)/(1+exp(2*c*(b*x+a))))^2*exp
(c*(b*x+a))-1/4/b/c*Pi*csgn(I*(exp(2*c*(b*x+a))+I)/(1+exp(2*c*(b*x+a))))*cs
gn((1+I)*(exp(2*c*(b*x+a))+I)/(1+exp(2*c*(b*x+a))))*exp(c*(b*x+a))+1/4/b/c*
Pi*csgn((1-I)*(exp(2*c*(b*x+a))-I)/(1+exp(2*c*(b*x+a))))^2*exp(c*(b*x+a))+1
/4/b/c*Pi*csgn(I*(exp(2*c*(b*x+a))-I)/(1+exp(2*c*(b*x+a))))^3*exp(c*(b*x+a)
)+1/4/b/c*Pi*csgn((1+I)*(exp(2*c*(b*x+a))+I)/(1+exp(2*c*(b*x+a))))^2*exp(c*
(b*x+a))-1/4/b/c*Pi*csgn((1+I)*(exp(2*c*(b*x+a))+I)/(1+exp(2*c*(b*x+a))))^3
*exp(c*(b*x+a))+1/2*I/b/c*exp(c*(b*x+a))*ln(exp(2*c*(b*x+a))-I)+1/4/b/c*Pi*
csgn(I/(1+exp(2*c*(b*x+a))))*csgn(I*(exp(2*c*(b*x+a))-I))*csgn(I*(exp(2*c*(
b*x+a))-I)/(1+exp(2*c*(b*x+a))))*exp(c*(b*x+a))-1/4/b/c*Pi*csgn(I/(1+exp(2*
c*(b*x+a))))*csgn(I*(exp(2*c*(b*x+a))+I))*csgn(I*(exp(2*c*(b*x+a))+I)/(1+ex
p(2*c*(b*x+a))))*exp(c*(b*x+a))+1/4/b/c*exp(c*(b*x+a))*Pi-1/4/b/c*ln(exp(c*
(b*x+a))+(1/2-1/2*I)*2^(1/2))*2^(1/2)+1/4/b/c*ln(exp(c*(b*x+a))-(1/2+1/2*I)
*2^(1/2))*2^(1/2)+1/4/b/c*ln(exp(c*(b*x+a))+(-1/2+1/2*I)*2^(1/2))*2^(1/2)-1
/4/b/c*ln(exp(c*(b*x+a))+(1/2+1/2*I)*2^(1/2))*2^(1/2)-1/2*I/b/c*exp(c*(b*x+
a))*ln(exp(2*c*(b*x+a))+I)
```

maxima [A] time = 0.43, size = 167, normalized size = 0.93

$$\frac{\operatorname{arccot}\left(\tanh\left(bcx+ac\right)\right)e^{\left((bx+a)c\right)}}{bc}+\frac{\sqrt{2}\arctan\left(\frac{1}{2}\sqrt{2}\left(\sqrt{2}+2e^{(bcx+ac)}\right)\right)}{2bc}+\frac{\sqrt{2}\arctan\left(-\frac{1}{2}\sqrt{2}\left(\sqrt{2}-2e^{(bcx+ac)}\right)\right)}{2bc}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(c*(b*x+a))*arccot(tanh(b*c*x+a*c)),x, algorithm="maxima")
```

```
[Out] arccot(tanh(b*c*x + a*c))*e^((b*x + a)*c)/(b*c) + 1/2*sqrt(2)*arctan(1/2*sq
rt(2)*(sqrt(2) + 2*e^(b*c*x + a*c)))/(b*c) + 1/2*sqrt(2)*arctan(-1/2*sqrt(2
)*(sqrt(2) - 2*e^(b*c*x + a*c)))/(b*c) - 1/4*sqrt(2)*log(sqrt(2)*e^(b*c*x +
 a*c) + e^(2*b*c*x + 2*a*c) + 1)/(b*c) + 1/4*sqrt(2)*log(-sqrt(2)*e^(b*c*x
+ a*c) + e^(2*b*c*x + 2*a*c) + 1)/(b*c)
```

mupad [B] time = 2.56, size = 164, normalized size = 0.91

$$\frac{4\,e^{a\,c+b\,c\,x}\,\mathrm{acot}\left(\frac{e^{2\,b\,c\,x}\,e^{2\,a\,c}-1}{e^{2\,b\,c\,x}\,e^{2\,a\,c}+1}\right)+\sqrt{2}\,\ln\left(\sqrt{2}\,(-4-4\mathrm{i})-e^{b\,c\,x}\,e^{a\,c}\,8\mathrm{i}\right)(-1-\mathrm{i})+\sqrt{2}\,\ln\left(\sqrt{2}\,(-4+4\mathrm{i})+e^{b\,c\,x}\,e^{a\,c}}{4\,b\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(exp(c*(a + b*x))*acot(tanh(a*c + b*c*x)),x)
```

```
[Out] (2^(1/2)*log(2^(1/2)*(4 - 4i) + exp(b*c*x)*exp(a*c)*8i)*(1 - 1i) - 2^(1/2)*
log(exp(b*c*x)*exp(a*c)*8i - 2^(1/2)*(4 - 4i))*(1 - 1i) - 2^(1/2)*log(- 2^(
1/2)*(4 + 4i) - exp(b*c*x)*exp(a*c)*8i)*(1 + 1i) + 2^(1/2)*log(2^(1/2)*(4 +
 4i) - exp(b*c*x)*exp(a*c)*8i)*(1 + 1i) + 4*exp(a*c + b*c*x)*acot((exp(2*b*
c*x)*exp(2*a*c) - 1)/(exp(2*b*c*x)*exp(2*a*c) + 1)))/(4*b*c)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(c*(b*x+a))*acot(tanh(b*c*x+a*c)),x)
```

```
[Out] Timed out
```

3.232 $\int e^{c(a+bx)} \cot^{-1}(\coth(ac+bcx))\,dx$

Optimal. Leaf size=180

$$-\frac{\log\left(e^{2c(a+bx)}-\sqrt{2}\,e^{ac+bcx}+1\right)}{2\sqrt{2}\,bc}+\frac{\log\left(e^{2c(a+bx)}+\sqrt{2}\,e^{ac+bcx}+1\right)}{2\sqrt{2}\,bc}+\frac{\tan^{-1}\left(1-\sqrt{2}\,e^{ac+bcx}\right)}{\sqrt{2}\,bc}-\frac{\tan^{-1}\left(\sqrt{2}\,e^{ac+bcx}+1\right)}{\sqrt{2}\,bc}$$

```
[Out] exp(b*c*x+a*c)*arccot(coth(c*(b*x+a)))/b/c-1/2*arctan(-1+exp(b*c*x+a*c)*2^(
1/2))/b/c*2^(1/2)-1/2*arctan(1+exp(b*c*x+a*c)*2^(1/2))/b/c*2^(1/2)-1/4*ln(1
+exp(2*c*(b*x+a))-exp(b*c*x+a*c)*2^(1/2))/b/c*2^(1/2)+1/4*ln(1+exp(2*c*(b*x
+a))+exp(b*c*x+a*c)*2^(1/2))/b/c*2^(1/2)
```

Rubi [A] time = 0.18, antiderivative size = 180, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 10, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.500, Rules used = {2194, 5208, 12, 2249, 297, 1162, 617, 204, 1165, 628}

$$-\frac{\log\left(e^{2c(a+bx)}-\sqrt{2}\,e^{ac+bcx}+1\right)}{2\sqrt{2}\,bc}+\frac{\log\left(e^{2c(a+bx)}+\sqrt{2}\,e^{ac+bcx}+1\right)}{2\sqrt{2}\,bc}+\frac{\tan^{-1}\left(1-\sqrt{2}\,e^{ac+bcx}\right)}{\sqrt{2}\,bc}-\frac{\tan^{-1}\left(\sqrt{2}\,e^{ac+bcx}+1\right)}{\sqrt{2}\,bc}$$

Antiderivative was successfully verified.

```
[In] Int[E^(c*(a + b*x))*ArcCot[Coth[a*c + b*c*x]],x]
```

```
[Out] (E^(a*c + b*c*x)*ArcCot[Coth[c*(a + b*x)]])/(b*c) + ArcTan[1 - Sqrt[2]*E^(a
*c + b*c*x)]/(Sqrt[2]*b*c) - ArcTan[1 + Sqrt[2]*E^(a*c + b*c*x)]/(Sqrt[2]*b
*c) - Log[1 + E^(2*c*(a + b*x)) - Sqrt[2]*E^(a*c + b*c*x)]/(2*Sqrt[2]*b*c)
+ Log[1 + E^(2*c*(a + b*x)) + Sqrt[2]*E^(a*c + b*c*x)]/(2*Sqrt[2]*b*c)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 297

```
Int[(x_)^2/((a_) + (b_.)*(x_)^4), x_Symbol] :> With[{r = Numerator[Rt[a/b,
2]], s = Denominator[Rt[a/b, 2]]}, Dist[1/(2*s), Int[(r + s*x^2)/(a + b*x^4
), x], x] - Dist[1/(2*s), Int[(r - s*x^2)/(a + b*x^4), x], x]] /; FreeQ[{a,
 b}, x] && (GtQ[a/b, 0] || (PosQ[a/b] && AtomQ[SplitProduct[SumBaseQ, a]] &
& AtomQ[SplitProduct[SumBaseQ, b]]))
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 2194

```
Int[((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.), x_Symbol] :> Simp[(F^(c*(a +
 b*x)))^n/(b*c*n*Log[F]), x] /; FreeQ[{F, a, b, c, n}, x]
```

Rule 2249

```
Int[((a_) + (b_.)*(F_)^((e_.)*((c_.) + (d_.)*(x_))))^(p_.)*(G_)^((h_.)*((f_
.) + (g_.)*(x_))), x_Symbol] :> With[{m = FullSimplify[(d*e*Log[F])/(g*h*Lo
g[G])]}, Dist[Denominator[m]/(g*h*Log[G]), Subst[Int[x^(Denominator[m] - 1)
*(a + b*F^(c*e - (d*e*f)/g)*x^Numerator[m])^p, x], x, G^((h*(f + g*x))/Deno
minator[m])], x] /; LtQ[m, -1] || GtQ[m, 1]] /; FreeQ[{F, G, a, b, c, d, e,
 f, g, h, p}, x]
```

Rule 5208

```
Int[((a_.) + ArcCot[u_]*(b_.))*(v_), x_Symbol] :> With[{w = IntHide[v, x]},
 Dist[a + b*ArcCot[u], w, x] + Dist[b, Int[SimplifyIntegrand[(w*D[u, x])/(1
 + u^2), x], x], x] /; InverseFunctionFreeQ[w, x]] /; FreeQ[{a, b}, x] && I
nverseFunctionFreeQ[u, x] &&  !MatchQ[v, ((c_.) + (d_.)*x)^(m_.) /; FreeQ[{
c, d, m}, x]] && FalseQ[FunctionOfLinear[v*(a + b*ArcCot[u]), x]]
```

Rubi steps

$$\int e^{c(a+bx)}\cot^{-1}(\coth(ac+bcx))\,dx = \frac{\text{Subst}\left(\int e^x\cot^{-1}(\coth(x))\,dx, x, ac+bcx\right)}{bc}$$

$$= \frac{e^{ac+bcx}\cot^{-1}(\coth(c(a+bx)))}{bc} + \frac{\text{Subst}\left(\int \frac{2e^{3x}}{-1-e^{4x}}\,dx, x, ac+bcx\right)}{bc}$$

$$= \frac{e^{ac+bcx}\cot^{-1}(\coth(c(a+bx)))}{bc} + \frac{2\,\text{Subst}\left(\int \frac{e^{3x}}{-1-e^{4x}}\,dx, x, ac+bcx\right)}{bc}$$

$$= \frac{e^{ac+bcx}\cot^{-1}(\coth(c(a+bx)))}{bc} + \frac{2\,\text{Subst}\left(\int \frac{x^2}{-1-x^4}\,dx, x, e^{ac+bcx}\right)}{bc}$$

$$= \frac{e^{ac+bcx}\cot^{-1}(\coth(c(a+bx)))}{bc} - \frac{\text{Subst}\left(\int \frac{1-x^2}{-1-x^4}\,dx, x, e^{ac+bcx}\right)}{bc} + \frac{\text{Subst}\left(\int \right.}{}$$

$$= \frac{e^{ac+bcx}\cot^{-1}(\coth(c(a+bx)))}{bc} - \frac{\text{Subst}\left(\int \frac{1}{1-\sqrt{2}x+x^2}\,dx, x, e^{ac+bcx}\right)}{2bc} - \frac{\text{Subst}}{}$$

$$= \frac{e^{ac+bcx}\cot^{-1}(\coth(c(a+bx)))}{bc} - \frac{\log\left(1-\sqrt{2}e^{ac+bcx}+e^{2ac+2bcx}\right)}{2\sqrt{2}bc} + \frac{\log\left(1+\right.}{}$$

$$= \frac{e^{ac+bcx}\cot^{-1}(\coth(c(a+bx)))}{bc} + \frac{\tan^{-1}\left(1-\sqrt{2}e^{ac+bcx}\right)}{\sqrt{2}bc} - \frac{\tan^{-1}\left(1+\sqrt{2}e^{ac}\right.}{\sqrt{2}bc}$$

Mathematica [C] time = 0.12, size = 89, normalized size = 0.49

$$\frac{\text{RootSum}\left[\#1^4+1\&, \frac{-\log\left(e^{c(a+bx)}-\#1\right)+ac+bcx}{\#1}\&\right]+2e^{c(a+bx)}\cot^{-1}\left(\frac{e^{2c(a+bx)}+1}{e^{2c(a+bx)}-1}\right)}{2bc}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[E^(c*(a + b*x))*ArcCot[Coth[a*c + b*c*x]],x]
```

```
[Out] (2*E^(c*(a + b*x))*ArcCot[(1 + E^(2*c*(a + b*x)))/(-1 + E^(2*c*(a + b*x)))]
 + RootSum[1 + #1^4 & , (a*c + b*c*x - Log[E^(c*(a + b*x)) - #1])/#1 & ])/(
2*b*c)
```

fricas [B] time = 0.68, size = 431, normalized size = 2.39

$$4\sqrt{2}bc\left(\frac{1}{b^4c^4}\right)^{\frac{1}{4}}\arctan\left(-\sqrt{2}bc\left(\frac{1}{b^4c^4}\right)^{\frac{1}{4}}e^{(bcx+ac)}+\sqrt{2}\sqrt{\sqrt{2}b^3c^3\left(\frac{1}{b^4c^4}\right)^{\frac{3}{4}}e^{(bcx+ac)}+b^2c^2\sqrt{\frac{1}{b^4c^4}}+e^{(2bcx+2ac)}}\,bc\left(\frac{1}{b^4c^4}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(c*(b*x+a))*arccot(coth(b*c*x+a*c)),x, algorithm="fricas")
```

```
[Out] 1/4*(4*sqrt(2)*b*c*(1/(b^4*c^4))^(1/4)*arctan(-sqrt(2)*b*c*(1/(b^4*c^4))^(1
/4)*e^(b*c*x + a*c) + sqrt(2)*sqrt(sqrt(2)*b^3*c^3*(1/(b^4*c^4))^(3/4)*e^(b
*c*x + a*c) + b^2*c^2*sqrt(1/(b^4*c^4)) + e^(2*b*c*x + 2*a*c))*b*c*(1/(b^4*
c^4))^(1/4) - 1) + 4*sqrt(2)*b*c*(1/(b^4*c^4))^(1/4)*arctan(-sqrt(2)*b*c*(1
/(b^4*c^4))^(1/4)*e^(b*c*x + a*c) + sqrt(2)*sqrt(-sqrt(2)*b^3*c^3*(1/(b^4*c
^4))^(3/4)*e^(b*c*x + a*c) + b^2*c^2*sqrt(1/(b^4*c^4)) + e^(2*b*c*x + 2*a*c
))*b*c*(1/(b^4*c^4))^(1/4) + 1) + sqrt(2)*b*c*(1/(b^4*c^4))^(1/4)*log(sqrt(
2)*b^3*c^3*(1/(b^4*c^4))^(3/4)*e^(b*c*x + a*c) + b^2*c^2*sqrt(1/(b^4*c^4))
+ e^(2*b*c*x + 2*a*c)) - sqrt(2)*b*c*(1/(b^4*c^4))^(1/4)*log(-sqrt(2)*b^3*c
```

```
^3*(1/(b^4*c^4))^(3/4)*e^(b*c*x + a*c) + b^2*c^2*sqrt(1/(b^4*c^4)) + e^(2*b
*c*x + 2*a*c)) + 4*arctan((e^(2*b*c*x + 2*a*c) - 1)/(e^(2*b*c*x + 2*a*c) +
1))*e^(b*c*x + a*c))/(b*c)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$sage_0x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(c*(b*x+a))*arccot(coth(b*c*x+a*c)),x, algorithm="giac")
```

```
[Out] sage0*x
```

maple [C] time = 1.48, size = 1323, normalized size = 7.35

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(exp(c*(b*x+a))*arccot(coth(b*c*x+a*c)),x)
```

```
[Out] -1/4/b/c*Pi*csgn((1+I)*(exp(2*c*(b*x+a))-I)/(exp(2*c*(b*x+a))-1))^3*exp(c*(
b*x+a))-1/4/b/c*Pi*csgn(I*(exp(2*c*(b*x+a))-I)/(exp(2*c*(b*x+a))-1))^3*exp(
c*(b*x+a))-1/4/b/c*Pi*csgn((1-I)*(exp(2*c*(b*x+a))+I)/(exp(2*c*(b*x+a))-1))
^3*exp(c*(b*x+a))+1/4/b/c*Pi*csgn(I*(exp(2*c*(b*x+a))+I)/(exp(2*c*(b*x+a))-
1))^3*exp(c*(b*x+a))+1/4/b/c*Pi*csgn((1+I)*(exp(2*c*(b*x+a))-I)/(exp(2*c*(b
*x+a))-1))^2*exp(c*(b*x+a))+1/4/b/c*Pi*csgn((1-I)*(exp(2*c*(b*x+a))+I)/(exp
(2*c*(b*x+a))-1))^2*exp(c*(b*x+a))+1/4*I/b/c*ln(exp(c*(b*x+a))-(1/2+1/2*I)*
2^(1/2))*2^(1/2)-1/4*I/b/c*ln(exp(c*(b*x+a))+(1/2+1/2*I)*2^(1/2))*2^(1/2)-1
/2*I/b/c*exp(c*(b*x+a))*ln(exp(2*c*(b*x+a))-I)+1/4/b/c*Pi*csgn(I*(exp(2*c*(
b*x+a))-I)/(exp(2*c*(b*x+a))-1))*csgn((1+I)*(exp(2*c*(b*x+a))-I)/(exp(2*c*(
b*x+a))-1))^2*exp(c*(b*x+a))-1/4/b/c*Pi*csgn(I*(exp(2*c*(b*x+a))-I))*csgn(I
/(exp(2*c*(b*x+a))-1))*csgn(I*(exp(2*c*(b*x+a))-I)/(exp(2*c*(b*x+a))-1))*ex
p(c*(b*x+a))+1/4/b/c*Pi*csgn(I*(exp(2*c*(b*x+a))+I))*csgn(I/(exp(2*c*(b*x+a
))-1))*csgn(I*(exp(2*c*(b*x+a))+I)/(exp(2*c*(b*x+a))-1))*exp(c*(b*x+a))+1/4
/b/c*Pi*csgn(I*(exp(2*c*(b*x+a))-I))*csgn(I*(exp(2*c*(b*x+a))-I)/(exp(2*c*(
b*x+a))-1))^2*exp(c*(b*x+a))+1/4/b/c*Pi*csgn(I/(exp(2*c*(b*x+a))-1))*csgn(I
*(exp(2*c*(b*x+a))-I)/(exp(2*c*(b*x+a))-1))^2*exp(c*(b*x+a))-1/4/b/c*Pi*csg
n(I*(exp(2*c*(b*x+a))+I))*csgn(I*(exp(2*c*(b*x+a))+I)/(exp(2*c*(b*x+a))-1))
^2*exp(c*(b*x+a))-1/4/b/c*Pi*csgn(I*(exp(2*c*(b*x+a))+I)/(exp(2*c*(b*x+a))-
1))*csgn((1-I)*(exp(2*c*(b*x+a))+I)/(exp(2*c*(b*x+a))-1))^2*exp(c*(b*x+a))-
1/4/b/c*Pi*csgn(I/(exp(2*c*(b*x+a))-1))*csgn(I*(exp(2*c*(b*x+a))+I)/(exp(2*
c*(b*x+a))-1))^2*exp(c*(b*x+a))-1/4/b/c*Pi*csgn(I*(exp(2*c*(b*x+a))-I)/(exp
(2*c*(b*x+a))-1))*csgn((1+I)*(exp(2*c*(b*x+a))-I)/(exp(2*c*(b*x+a))-1))*exp
(c*(b*x+a))+1/4/b/c*Pi*csgn(I*(exp(2*c*(b*x+a))+I)/(exp(2*c*(b*x+a))-1))*cs
gn((1-I)*(exp(2*c*(b*x+a))+I)/(exp(2*c*(b*x+a))-1))*exp(c*(b*x+a))-1/4*I/b/
c*ln(exp(c*(b*x+a))+(-1/2+1/2*I)*2^(1/2))*2^(1/2)+1/4*I/b/c*ln(exp(c*(b*x+a
))+(1/2-1/2*I)*2^(1/2))*2^(1/2)+1/2*I/b/c*exp(c*(b*x+a))*ln(exp(2*c*(b*x+a)
)+I)+1/4/b/c*exp(c*(b*x+a))*Pi+1/4/b/c*ln(exp(c*(b*x+a))+(1/2-1/2*I)*2^(1/2
))*2^(1/2)-1/4/b/c*ln(exp(c*(b*x+a))-(1/2+1/2*I)*2^(1/2))*2^(1/2)-1/4/b/c*l
n(exp(c*(b*x+a))+(-1/2+1/2*I)*2^(1/2))*2^(1/2)+1/4/b/c*ln(exp(c*(b*x+a))+(1
/2+1/2*I)*2^(1/2))*2^(1/2)
```

maxima [A] time = 0.44, size = 167, normalized size = 0.93

$$\frac{\operatorname{arccot}\left(\coth\left(bcx+ac\right)\right)e^{\left((bx+a)c\right)}}{bc}-\frac{\sqrt{2}\arctan\left(\frac{1}{2}\sqrt{2}\left(\sqrt{2}+2e^{\left(bcx+ac\right)}\right)\right)}{2bc}-\frac{\sqrt{2}\arctan\left(-\frac{1}{2}\sqrt{2}\left(\sqrt{2}-2e^{\left(bcx+ac\right)}\right)\right)}{2bc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(c*(b*x+a))*arccot(coth(b*c*x+a*c)),x, algorithm="maxima")
```

```
[Out] arccot(coth(b*c*x + a*c))*e^((b*x + a)*c)/(b*c) - 1/2*sqrt(2)*arctan(1/2*sq
rt(2)*(sqrt(2) + 2*e^(b*c*x + a*c)))/(b*c) - 1/2*sqrt(2)*arctan(-1/2*sqrt(2
)*(sqrt(2) - 2*e^(b*c*x + a*c)))/(b*c) + 1/4*sqrt(2)*log(sqrt(2)*e^(b*c*x +
 a*c) + e^(2*b*c*x + 2*a*c) + 1)/(b*c) - 1/4*sqrt(2)*log(-sqrt(2)*e^(b*c*x
+ a*c) + e^(2*b*c*x + 2*a*c) + 1)/(b*c)
```

mupad [B] time = 2.37, size = 164, normalized size = 0.91

$$\frac{4\,e^{a\,c+b\,c\,x}\,\mathrm{acot}\left(\frac{e^{2\,b\,c\,x}\,e^{2\,a\,c}+1}{e^{2\,b\,c\,x}\,e^{2\,a\,c}-1}\right)+\sqrt{2}\,\ln\left(\sqrt{2}\,\left(-4-4\mathrm{i}\right)+e^{b\,c\,x}\,e^{a\,c}\,8\mathrm{i}\right)\,\left(-1-\mathrm{i}\right)+\sqrt{2}\,\ln\left(\sqrt{2}\,\left(-4+4\mathrm{i}\right)-e^{b\,c\,x}\,e^{a\,c}\,8\mathrm{i}\right)}{4\,b\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(exp(c*(a + b*x))*acot(coth(a*c + b*c*x)),x)
```

```
[Out] (2^(1/2)*log(2^(1/2)*(4 - 4i) - exp(b*c*x)*exp(a*c)*8i)*(1 - 1i) - 2^(1/2)*
log(- 2^(1/2)*(4 - 4i) - exp(b*c*x)*exp(a*c)*8i)*(1 - 1i) - 2^(1/2)*log(exp
(b*c*x)*exp(a*c)*8i - 2^(1/2)*(4 + 4i))*(1 + 1i) + 2^(1/2)*log(2^(1/2)*(4 +
 4i) + exp(b*c*x)*exp(a*c)*8i)*(1 + 1i) + 4*exp(a*c + b*c*x)*acot((exp(2*b*
c*x)*exp(2*a*c) + 1)/(exp(2*b*c*x)*exp(2*a*c) - 1)))/(4*b*c)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$e^{ac}\int e^{bcx}\operatorname{acot}\left(\coth\left(ac+bcx\right)\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(c*(b*x+a))*acot(coth(b*c*x+a*c)),x)
```

```
[Out] exp(a*c)*Integral(exp(b*c*x)*acot(coth(a*c + b*c*x)), x)
```

3.233 $\int e^{c(a+bx)} \cot^{-1}(\mathbf{sech}(ac+bcx))\,dx$

Optimal. Leaf size=103

$$-\frac{\left(1-\sqrt{2}\right)\log\left(e^{2c(a+bx)}+3-2\sqrt{2}\right)}{2bc}-\frac{\left(1+\sqrt{2}\right)\log\left(e^{2c(a+bx)}+3+2\sqrt{2}\right)}{2bc}+\frac{e^{ac+bcx}\cot^{-1}(\operatorname{sech}(c(a+bx)))}{bc}$$

```
[Out] exp(b*c*x+a*c)*arccot(sech(c*(b*x+a)))/b/c-1/2*ln(3+exp(2*c*(b*x+a))-2*2^(1
/2))*(1-2^(1/2))/b/c-1/2*ln(3+exp(2*c*(b*x+a))+2*2^(1/2))*(1+2^(1/2))/b/c
```

Rubi [A] time = 0.15, antiderivative size = 103, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 7, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.350, Rules used = {2194, 5208, 2282, 12, 1247, 632, 31}

$$-\frac{\left(1-\sqrt{2}\right)\log\left(e^{2c(a+bx)}+3-2\sqrt{2}\right)}{2bc}-\frac{\left(1+\sqrt{2}\right)\log\left(e^{2c(a+bx)}+3+2\sqrt{2}\right)}{2bc}+\frac{e^{ac+bcx}\cot^{-1}(\operatorname{sech}(c(a+bx)))}{bc}$$

Antiderivative was successfully verified.

```
[In] Int[E^(c*(a + b*x))*ArcCot[Sech[a*c + b*c*x]],x]
```

```
[Out] (E^(a*c + b*c*x)*ArcCot[Sech[c*(a + b*x)]])/(b*c) - ((1 - Sqrt[2])*Log[3 -
2*Sqrt[2] + E^(2*c*(a + b*x))])/(2*b*c) - ((1 + Sqrt[2])*Log[3 + 2*Sqrt[2]
+ E^(2*c*(a + b*x))])/(2*b*c)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 632

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> W
ith[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(c*d - e*(b/2 - q/2))/q, Int[1/(b/2 - q/
2 + c*x), x], x] - Dist[(c*d - e*(b/2 + q/2))/q, Int[1/(b/2 + q/2 + c*x), x
], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[2*c*d - b*e, 0] && NeQ[b^2 - 4*a
*c, 0] && NiceSqrtQ[b^2 - 4*a*c]
```

Rule 1247

```
Int[(x_)*((d_) + (e_.)*(x_)^2)^(q_.)*((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4)^(
p_.), x_Symbol] :> Dist[1/2, Subst[Int[(d + e*x)^q*(a + b*x + c*x^2)^p, x],
 x, x^2], x] /; FreeQ[{a, b, c, d, e, p, q}, x]
```

Rule 2194

```
Int[((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.), x_Symbol] :> Simp[(F^(c*(a +
 b*x)))^n/(b*c*n*Log[F]), x] /; FreeQ[{F, a, b, c, n}, x]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
```

```
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 5208

```
Int[((a_.) + ArcCot[u_]*(b_.))*(v_), x_Symbol] :> With[{w = IntHide[v, x]},
 Dist[a + b*ArcCot[u], w, x] + Dist[b, Int[SimplifyIntegrand[(w*D[u, x])/(1
 + u^2), x], x], x] /; InverseFunctionFreeQ[w, x]] /; FreeQ[{a, b}, x] && I
nverseFunctionFreeQ[u, x] &&  !MatchQ[v, ((c_.) + (d_.)*x)^(m_.) /; FreeQ[{
c, d, m}, x]] && FalseQ[FunctionOfLinear[v*(a + b*ArcCot[u]), x]]
```

Rubi steps

$$\int e^{c(a+bx)}\cot^{-1}(\text{sech}(ac+bcx))\,dx = \frac{\text{Subst}\left(\int e^x\cot^{-1}(\text{sech}(x))\,dx, x, ac+bcx\right)}{bc}$$

$$= \frac{e^{ac+bcx}\cot^{-1}(\text{sech}(c(a+bx)))}{bc} - \frac{\text{Subst}\left(\int \frac{e^x\text{sech}(x)\tanh(x)}{1+\text{sech}^2(x)}\,dx, x, ac+bcx\right)}{bc}$$

$$= \frac{e^{ac+bcx}\cot^{-1}(\text{sech}(c(a+bx)))}{bc} - \frac{\text{Subst}\left(\int \frac{2x(-1+x^2)}{1+6x^2+x^4}\,dx, x, e^{ac+bcx}\right)}{bc}$$

$$= \frac{e^{ac+bcx}\cot^{-1}(\text{sech}(c(a+bx)))}{bc} - \frac{2\,\text{Subst}\left(\int \frac{x(-1+x^2)}{1+6x^2+x^4}\,dx, x, e^{ac+bcx}\right)}{bc}$$

$$= \frac{e^{ac+bcx}\cot^{-1}(\text{sech}(c(a+bx)))}{bc} - \frac{\text{Subst}\left(\int \frac{-1+x}{1+6x+x^2}\,dx, x, e^{2ac+2bcx}\right)}{bc}$$

$$= \frac{e^{ac+bcx}\cot^{-1}(\text{sech}(c(a+bx)))}{bc} - \frac{\left(1-\sqrt{2}\right)\text{Subst}\left(\int \frac{1}{3-2\sqrt{2}+x}\,dx, x, e^{2ac+2bcx}\right.}{2bc}$$

$$= \frac{e^{ac+bcx}\cot^{-1}(\text{sech}(c(a+bx)))}{bc} - \frac{\left(1-\sqrt{2}\right)\log\left(3-2\sqrt{2}+e^{2ac+2bcx}\right)}{2bc} - \frac{(1+}{}$$

Mathematica [C] time = 0.16, size = 145, normalized size = 1.41

$$\frac{\text{RootSum}\left[\#1^4+6\#1^2+1\&, \frac{-7\#1^2\log\left(e^{c(a+bx)}-\#1\right)+7\#1^2ac+7\#1^2bcx-\log\left(e^{c(a+bx)}-\#1\right)+ac+bcx}{3\#1^2+1}\&\right]-4c(a+bx)+2e^{c(a+bx)}\cot^{-}}{2bc}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[E^(c*(a + b*x))*ArcCot[Sech[a*c + b*c*x]],x]
```

```
[Out] (-4*c*(a + b*x) + 2*E^(c*(a + b*x))*ArcCot[(2*E^(c*(a + b*x)))/(1 + E^(2*c*
(a + b*x)))] + RootSum[1 + 6*#1^2 + #1^4 & , (a*c + b*c*x - Log[E^(c*(a + b
*x)) - #1] + 7*a*c*#1^2 + 7*b*c*x*#1^2 - 7*Log[E^(c*(a + b*x)) - #1]*#1^2)/
(1 + 3*#1^2) & ])/(2*b*c)
```

fricas [B] time = 0.45, size = 221, normalized size = 2.15

$$\frac{2\left(\cosh(bcx+ac)+\sinh(bcx+ac)\right)\arctan\left(\cosh(bcx+ac)\right)+\sqrt{2}\log\left(-\frac{3\left(2\sqrt{2}-3\right)\cosh(bcx+ac)^2-4\left(3\sqrt{2}-4\right)\cosh(bcx+}{\cosh(bcx+ac)^2}\right.}{2bc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(c*(b*x+a))*arccot(sech(b*c*x+a*c)),x, algorithm="fricas")
```

```
[Out] 1/2*(2*(cosh(b*c*x + a*c) + sinh(b*c*x + a*c))*arctan(cosh(b*c*x + a*c)) +
sqrt(2)*log(-(3*(2*sqrt(2) - 3)*cosh(b*c*x + a*c)^2 - 4*(3*sqrt(2) - 4)*cos
h(b*c*x + a*c)*sinh(b*c*x + a*c) + 3*(2*sqrt(2) - 3)*sinh(b*c*x + a*c)^2 +
2*sqrt(2) - 3)/(cosh(b*c*x + a*c)^2 + sinh(b*c*x + a*c)^2 + 3)) - log(2*(co
sh(b*c*x + a*c)^2 + sinh(b*c*x + a*c)^2 + 3)/(cosh(b*c*x + a*c)^2 - 2*cosh(
b*c*x + a*c)*sinh(b*c*x + a*c) + sinh(b*c*x + a*c)^2)))/(b*c)
```

giac [A] time = 0.13, size = 154, normalized size = 1.50

$$\frac{\left(\sqrt{2}\, e^{(-ac)} \log\left(-\frac{2\sqrt{2}\, e^{(2\,ac)} - e^{(2\,bcx+4\,ac)} - 3\, e^{(2\,ac)}}{2\sqrt{2}\, e^{(2\,ac)} + e^{(2\,bcx+4\,ac)} + 3\, e^{(2\,ac)}}\right) + 2\,\arctan\left(\frac{1}{2}\, e^{(bcx+ac)} + \frac{1}{2}\, e^{(-bcx-ac)}\right) e^{(bcx)} - e^{(-ac)} \log\left(e^{(4\,bcx+4\,ac)} + \right.\right.}{2\,bc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(c*(b*x+a))*arccot(sech(b*c*x+a*c)),x, algorithm="giac")
```

```
[Out] 1/2*(sqrt(2)*e^(-a*c)*log(-(2*sqrt(2)*e^(2*a*c) - e^(2*b*c*x + 4*a*c) - 3*e
^(2*a*c))/(2*sqrt(2)*e^(2*a*c) + e^(2*b*c*x + 4*a*c) + 3*e^(2*a*c))) + 2*ar
ctan(1/2*e^(b*c*x + a*c) + 1/2*e^(-b*c*x - a*c))*e^(b*c*x) - e^(-a*c)*log(e
^(4*b*c*x + 4*a*c) + 6*e^(2*b*c*x + 2*a*c) + 1))*e^(a*c)/(b*c)
```

maple [C] time = 0.76, size = 859, normalized size = 8.34

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(exp(c*(b*x+a))*arccot(sech(b*c*x+a*c)),x)
```

```
[Out] 1/2*I/b/c*exp(c*(b*x+a))*ln(exp(2*c*(b*x+a))+1+2*I*exp(c*(b*x+a)))-1/4/b/c*
Pi*csgn(I*(exp(2*c*(b*x+a))+1+2*I*exp(c*(b*x+a))))*csgn(I*(exp(2*c*(b*x+a))
+1+2*I*exp(c*(b*x+a)))/(1+exp(2*c*(b*x+a))))^2*exp(c*(b*x+a))+1/4/b/c*Pi*cs
gn(I*(exp(2*c*(b*x+a))+1+2*I*exp(c*(b*x+a))))*csgn(I/(1+exp(2*c*(b*x+a))))*
csgn(I*(exp(2*c*(b*x+a))+1+2*I*exp(c*(b*x+a)))/(1+exp(2*c*(b*x+a))))*exp(c*
(b*x+a))+1/4/b/c*Pi*csgn(I*(exp(2*c*(b*x+a))+1+2*I*exp(c*(b*x+a)))/(1+exp(2
*c*(b*x+a))))^3*exp(c*(b*x+a))-1/4/b/c*Pi*csgn(I/(1+exp(2*c*(b*x+a))))*csgn
(I*(exp(2*c*(b*x+a))+1+2*I*exp(c*(b*x+a)))/(1+exp(2*c*(b*x+a))))^2*exp(c*(b
*x+a))-1/4/b/c*Pi*csgn(I*(-exp(2*c*(b*x+a))-1+2*I*exp(c*(b*x+a))))*csgn(I/(
1+exp(2*c*(b*x+a))))*csgn(I*(-exp(2*c*(b*x+a))-1+2*I*exp(c*(b*x+a)))/(1+exp
(2*c*(b*x+a))))*exp(c*(b*x+a))-1/4/b/c*Pi*csgn(I*(-exp(2*c*(b*x+a))-1+2*I*e
xp(c*(b*x+a))))*csgn(I*(-exp(2*c*(b*x+a))-1+2*I*exp(c*(b*x+a)))/(1+exp(2*c*
(b*x+a))))^2*exp(c*(b*x+a))+1/4/b/c*Pi*csgn(I/(1+exp(2*c*(b*x+a))))*csgn(I*
(-exp(2*c*(b*x+a))-1+2*I*exp(c*(b*x+a)))/(1+exp(2*c*(b*x+a))))^2*exp(c*(b*x
+a))+1/4/b/c*Pi*csgn(I*(-exp(2*c*(b*x+a))-1+2*I*exp(c*(b*x+a)))/(1+exp(2*c*
(b*x+a))))^3*exp(c*(b*x+a))-1/2*I/b/c*exp(c*(b*x+a))*ln(exp(2*c*(b*x+a))+1-
2*I*exp(c*(b*x+a)))+1/2/b/c*exp(c*(b*x+a))*Pi+1/2/b/c*ln(exp(2*c*(b*x+a))+(
2^(1/2)-1)^2)*2^(1/2)-1/2/b/c*ln(exp(2*c*(b*x+a))+(1+2^(1/2))^2)*2^(1/2)+2*
a/b-1/2/b/c*ln(exp(2*c*(b*x+a))+(2^(1/2)-1)^2)-1/2/b/c*ln(exp(2*c*(b*x+a))+
(1+2^(1/2))^2)
```

maxima [A] time = 0.48, size = 169, normalized size = 1.64

$$\frac{\operatorname{arccot}\left(\operatorname{sech}\left(bcx+ac\right)\right) e^{((bx+a)c)}}{bc} + \frac{3\sqrt{2}\,\log\left(-\frac{2\sqrt{2}-e^{(2\,bcx+2\,ac)}-3}{2\sqrt{2}+e^{(2\,bcx+2\,ac)}+3}\right)}{8\,bc} - \frac{\sqrt{2}\,\log\left(-\frac{2\sqrt{2}-e^{(-2\,bcx-2\,ac)}-3}{2\sqrt{2}+e^{(-2\,bcx-2\,ac)}+3}\right)}{8\,bc} - \frac{\log\left(e^{(4\,bcx+4\,a}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(c*(b*x+a))*arccot(sech(b*c*x+a*c)),x, algorithm="maxima")
```

```
[Out] arccot(sech(b*c*x + a*c))*e^((b*x + a)*c)/(b*c) + 3/8*sqrt(2)*log(-(2*sqrt(
2) - e^(2*b*c*x + 2*a*c) - 3)/(2*sqrt(2) + e^(2*b*c*x + 2*a*c) + 3))/(b*c)
```

```
- 1/8*sqrt(2)*log(-(2*sqrt(2) - e^(-2*b*c*x - 2*a*c) - 3)/(2*sqrt(2) + e^(-
2*b*c*x - 2*a*c) + 3))/(b*c) - 1/2*log(e^(4*b*c*x + 4*a*c) + 6*e^(2*b*c*x +
 2*a*c) + 1)/(b*c)
```

mupad [B] time = 0.83, size = 135, normalized size = 1.31

$$\frac{e^{a\,c+b\,c\,x}\,\mathrm{acot}\left(\frac{1}{\frac{e^{b\,c\,x}\,e^{a\,c}}{2}+\frac{e^{-b\,c\,x}\,e^{-a\,c}}{2}}\right)}{b\,c}+\frac{\ln\left(-8\,e^{2\,c\,(a+b\,x)}-2\,\sqrt{2}-6\,\sqrt{2}\,e^{2\,c\,(a+b\,x)}\right)\,\left(\sqrt{2}-1\right)}{2\,b\,c}-\frac{\ln\left(2\,\sqrt{2}-8\,e^{2\,c\,(a+b\,x)}+6\right.}{2\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(acot(1/cosh(a*c + b*c*x))*exp(c*(a + b*x)),x)
```

```
[Out] (exp(a*c + b*c*x)*acot(1/((exp(b*c*x)*exp(a*c))/2 + (exp(-b*c*x)*exp(-a*c))
/2)))/(b*c) + (log(- 8*exp(2*c*(a + b*x)) - 2*2^(1/2) - 6*2^(1/2)*exp(2*c*(
a + b*x)))*(2^(1/2) - 1))/(2*b*c) - (log(2*2^(1/2) - 8*exp(2*c*(a + b*x)) +
 6*2^(1/2)*exp(2*c*(a + b*x)))*(2^(1/2) + 1))/(2*b*c)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(c*(b*x+a))*acot(sech(b*c*x+a*c)),x)
```

```
[Out] Timed out
```

3.234 $\int e^{c(a+bx)} \cot^{-1}(\mathbf{csch}(ac + bcx))\, dx$

Optimal. Leaf size=48

$$\frac{e^{ac+bcx}\cot^{-1}(\operatorname{csch}(c(a+bx)))}{bc} - \frac{\log\left(e^{2c(a+bx)}+1\right)}{bc}$$

```
[Out] exp(b*c*x+a*c)*arccot(csch(c*(b*x+a)))/b/c-ln(1+exp(2*c*(b*x+a)))/b/c
```

Rubi [A] time = 0.08, antiderivative size = 48, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {2194, 5208, 2282, 12, 260}

$$\frac{e^{ac+bcx}\cot^{-1}(\operatorname{csch}(c(a+bx)))}{bc} - \frac{\log\left(e^{2c(a+bx)}+1\right)}{bc}$$

Antiderivative was successfully verified.

```
[In] Int[E^(c*(a + b*x))*ArcCot[Csch[a*c + b*c*x]],x]
```

```
[Out] (E^(a*c + b*c*x)*ArcCot[Csch[c*(a + b*x)]])/(b*c) - Log[1 + E^(2*c*(a + b*x
))]/(b*c)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 2194

```
Int[((F_)^((c_.)*((a_.) + (b_.)*(x_))))^(n_.), x_Symbol] :> Simp[(F^(c*(a +
 b*x)))^n/(b*c*n*Log[F]), x] /; FreeQ[{F, a, b, c, n}, x]
```

Rule 2282

```
Int[u_, x_Symbol] :> With[{v = FunctionOfExponential[u, x]}, Dist[v/D[v, x]
, Subst[Int[FunctionOfExponentialFunction[u, x]/x, x], x, v], x]] /; Functi
onOfExponentialQ[u, x] &&  !MatchQ[u, (w_)*((a_.)*(v_)^(n_))^(m_) /; FreeQ[
{a, m, n}, x] && IntegerQ[m*n]] &&  !MatchQ[u, E^((c_.)*((a_.) + (b_.)*x))*
(F_)[v_] /; FreeQ[{a, b, c}, x] && InverseFunctionQ[F[x]]]
```

Rule 5208

```
Int[((a_.) + ArcCot[u_]*(b_.))*(v_), x_Symbol] :> With[{w = IntHide[v, x]},
 Dist[a + b*ArcCot[u], w, x] + Dist[b, Int[SimplifyIntegrand[(w*D[u, x])/(1
 + u^2), x], x], x] /; InverseFunctionFreeQ[w, x]] /; FreeQ[{a, b}, x] && I
nverseFunctionFreeQ[u, x] &&  !MatchQ[v, ((c_.) + (d_.)*x)^(m_.) /; FreeQ[{
c, d, m}, x]] && FalseQ[FunctionOfLinear[v*(a + b*ArcCot[u]), x]]
```

Rubi steps

$$
\begin{aligned}
\int e^{c(a+bx)}\cot^{-1}(\operatorname{csch}(ac+bcx))\,dx &= \frac{\text{Subst}\left(\int e^x\cot^{-1}(\operatorname{csch}(x))\,dx,x,ac+bcx\right)}{bc}\\
&= \frac{e^{ac+bcx}\cot^{-1}(\operatorname{csch}(c(a+bx)))}{bc}-\frac{\text{Subst}\left(\int e^x\operatorname{sech}(x)\,dx,x,ac+bcx\right)}{bc}\\
&= \frac{e^{ac+bcx}\cot^{-1}(\operatorname{csch}(c(a+bx)))}{bc}-\frac{\text{Subst}\left(\int \frac{2x}{1+x^2}\,dx,x,e^{ac+bcx}\right)}{bc}\\
&= \frac{e^{ac+bcx}\cot^{-1}(\operatorname{csch}(c(a+bx)))}{bc}-\frac{2\,\text{Subst}\left(\int \frac{x}{1+x^2}\,dx,x,e^{ac+bcx}\right)}{bc}\\
&= \frac{e^{ac+bcx}\cot^{-1}(\operatorname{csch}(c(a+bx)))}{bc}-\frac{\log\left(1+e^{2c(a+bx)}\right)}{bc}
\end{aligned}
$$

Mathematica [A] time = 0.10, size = 59, normalized size = 1.23

$$
\frac{e^{c(a+bx)}\cot^{-1}\left(\frac{2e^{c(a+bx)}}{e^{2c(a+bx)}-1}\right)-\log\left(e^{2c(a+bx)}+1\right)}{bc}
$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[E^(c*(a + b*x))*ArcCot[Csch[a*c + b*c*x]],x]
```

```
[Out] (E^(c*(a + b*x))*ArcCot[(2*E^(c*(a + b*x)))/(-1 + E^(2*c*(a + b*x)))] - Log
[1 + E^(2*c*(a + b*x))])/(b*c)
```

fricas [A] time = 0.62, size = 75, normalized size = 1.56

$$
\frac{(\cosh(bcx+ac)+\sinh(bcx+ac))\arctan(\sinh(bcx+ac))-\log\left(\frac{2\cosh(bcx+ac)}{\cosh(bcx+ac)-\sinh(bcx+ac)}\right)}{bc}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(c*(b*x+a))*arccot(csch(b*c*x+a*c)),x, algorithm="fricas")
```

```
[Out] ((cosh(b*c*x + a*c) + sinh(b*c*x + a*c))*arctan(sinh(b*c*x + a*c)) - log(2*
cosh(b*c*x + a*c)/(cosh(b*c*x + a*c) - sinh(b*c*x + a*c))))/(b*c)
```

giac [A] time = 0.13, size = 65, normalized size = 1.35

$$
\frac{\left(\arctan\left(\frac{1}{2}e^{(bcx+ac)}-\frac{1}{2}e^{(-bcx-ac)}\right)e^{(bcx)}-e^{(-ac)}\log\left(e^{(2bcx+2ac)}+1\right)\right)e^{(ac)}}{bc}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(c*(b*x+a))*arccot(csch(b*c*x+a*c)),x, algorithm="giac")
```

```
[Out] (arctan(1/2*e^(b*c*x + a*c) - 1/2*e^(-b*c*x - a*c))*e^(b*c*x) - e^(-a*c)*lo
g(e^(2*b*c*x + 2*a*c) + 1))*e^(a*c)/(b*c)
```

maple [C] time = 0.60, size = 903, normalized size = 18.81

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(exp(c*(b*x+a))*arccot(csch(b*c*x+a*c)),x)
```

```
[Out] -I/b/c*exp(c*(b*x+a))*ln(exp(c*(b*x+a))-I)+1/4/b/c*Pi*csgn(I*(exp(c*(b*x+a)
)+I)^2/(exp(2*c*(b*x+a))-1))^3*exp(c*(b*x+a))-1/4/b/c*Pi*csgn(I*(exp(c*(b*x
+a))+I)^2)*csgn(I*(exp(c*(b*x+a))+I)^2/(exp(2*c*(b*x+a))-1))^2*exp(c*(b*x+a
))-1/4/b/c*Pi*csgn(I/(exp(2*c*(b*x+a))-1))*csgn(I*(exp(c*(b*x+a))+I)^2/(exp
(2*c*(b*x+a))-1))^2*exp(c*(b*x+a))+1/4/b/c*Pi*csgn(I*(exp(c*(b*x+a))+I)^2)*
csgn(I/(exp(2*c*(b*x+a))-1))*csgn(I*(exp(c*(b*x+a))+I)^2/(exp(2*c*(b*x+a))-
1))*exp(c*(b*x+a))-1/4/b/c*Pi*csgn(I*(exp(c*(b*x+a))-I)^2/(exp(2*c*(b*x+a))
-1))^3*exp(c*(b*x+a))+1/4/b/c*Pi*csgn(I*(exp(c*(b*x+a))-I)^2)*csgn(I*(exp(c
*(b*x+a))-I)^2/(exp(2*c*(b*x+a))-1))^2*exp(c*(b*x+a))+1/4/b/c*Pi*csgn(I/(ex
p(2*c*(b*x+a))-1))*csgn(I*(exp(c*(b*x+a))-I)^2/(exp(2*c*(b*x+a))-1))^2*exp(
c*(b*x+a))-1/4/b/c*Pi*csgn(I*(exp(c*(b*x+a))-I)^2)*csgn(I/(exp(2*c*(b*x+a))
-1))*csgn(I*(exp(c*(b*x+a))-I)^2/(exp(2*c*(b*x+a))-1))*exp(c*(b*x+a))+1/4/b
/c*Pi*csgn(I*(exp(c*(b*x+a))+I))^2*csgn(I*(exp(c*(b*x+a))+I)^2)*exp(c*(b*x+
a))-1/2/b/c*Pi*csgn(I*(exp(c*(b*x+a))+I))*csgn(I*(exp(c*(b*x+a))+I)^2)^2*ex
p(c*(b*x+a))+1/4/b/c*Pi*csgn(I*(exp(c*(b*x+a))+I)^2)^3*exp(c*(b*x+a))-1/4/b
/c*Pi*csgn(I*(exp(c*(b*x+a))-I))^2*csgn(I*(exp(c*(b*x+a))-I)^2)*exp(c*(b*x+
a))+1/2/b/c*Pi*csgn(I*(exp(c*(b*x+a))-I))*csgn(I*(exp(c*(b*x+a))-I)^2)^2*ex
p(c*(b*x+a))-1/4/b/c*Pi*csgn(I*(exp(c*(b*x+a))-I)^2)^3*exp(c*(b*x+a))+I/b/c
*exp(c*(b*x+a))*ln(exp(c*(b*x+a))+I)+1/2/b/c*exp(c*(b*x+a))*Pi+2*a/b-ln(1+e
xp(2*c*(b*x+a)))/b/c
```

maxima [A] time = 0.44, size = 48, normalized size = 1.00

$$\frac{\operatorname{arccot}\left(\operatorname{csch}\left(bcx+ac\right)\right)e^{\left(\left(bx+a\right)c\right)}}{bc}-\frac{\log\left(e^{\left(2\,bcx+2\,ac\right)}+1\right)}{bc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(c*(b*x+a))*arccot(csch(b*c*x+a*c)),x, algorithm="maxima")
```

```
[Out] arccot(csch(b*c*x + a*c))*e^((b*x + a)*c)/(b*c) - log(e^(2*b*c*x + 2*a*c) +
 1)/(b*c)
```

mupad [B] time = 0.71, size = 68, normalized size = 1.42

$$\frac{\mathrm{e}^{b\,c\,x}\,\mathrm{e}^{a\,c}\,\mathrm{acot}\left(\frac{1}{\frac{\mathrm{e}^{b\,c\,x}\,\mathrm{e}^{a\,c}}{2}-\frac{\mathrm{e}^{-b\,c\,x}\,\mathrm{e}^{-a\,c}}{2}}\right)}{b\,c}-\frac{\ln\left(\mathrm{e}^{2\,b\,c\,x}\,\mathrm{e}^{2\,a\,c}+1\right)}{b\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(acot(1/sinh(a*c + b*c*x))*exp(c*(a + b*x)),x)
```

```
[Out] (exp(b*c*x)*exp(a*c)*acot(1/((exp(b*c*x)*exp(a*c))/2 - (exp(-b*c*x)*exp(-a*
c))/2)))/(b*c) - log(exp(2*b*c*x)*exp(2*a*c) + 1)/(b*c)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$e^{ac}\int e^{bcx}\operatorname{acot}\left(\operatorname{csch}\left(ac+bcx\right)\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(exp(c*(b*x+a))*acot(csch(b*c*x+a*c)),x)
```

```
[Out] exp(a*c)*Integral(exp(b*c*x)*acot(csch(a*c + b*c*x)), x)
```

Chapter 4

Listing of Grading functions

The following are the current version of the grading functions used for grading the quality of the antiderivative with reference to the optimal antiderivative included in the test suite.

There is a version for Maple and for Mathematica/Rubi. There is a version for grading Sympy and version for use with Sagemath.

The following are links to the current source code.

The following are the listings of source code of the grading functions.

4.0.1 Mathematica and Rubi grading function

```
(* Original version thanks to Albert Rich emailed on 03/21/2017 *)
(* ::Package:: *)

(* ::Subsection:: *)
(*GradeAntiderivative[result,optimal]*)


(* ::Text:: *)
(*If result and optimal are mathematical expressions, *)
(*         GradeAntiderivative[result,optimal] returns*)
(*  "F" if the result fails to integrate an expression that*)
(*      is integrable*)
(*  "C" if result involves higher level functions than necessary*)
(*  "B" if result is more than twice the size of the optimal*)
(*      antiderivative*)
(*  "A" if result can be considered optimal*)


GradeAntiderivative[result_,optimal_] :=
  If[ExpnType[result]<=ExpnType[optimal],
    If[FreeQ[result,Complex] || Not[FreeQ[optimal,Complex]],
      If[LeafCount[result]<=2*LeafCount[optimal],
        "A",
      "B"],
    "C"],
  If[FreeQ[result,Integrate] && FreeQ[result,Int],
    "C",
  "F"]]


(* ::Text:: *)
(*The following summarizes the type number assigned an *)
(*expression based on the functions it involves*)
(*1 = rational function*)
(*2 = algebraic function*)
```

```
(*3 = elementary function*)
(*4 = special function*)
(*5 = hyperpergeometric function*)
(*6 = appell function*)
(*7 = rootsum function*)
(*8 = integrate function*)
(*9 = unknown function*)


ExpnType[expn_] :=
  If[AtomQ[expn],
    1,
  If[ListQ[expn],
    Max[Map[ExpnType,expn]],
  If[Head[expn]===Power,
    If[IntegerQ[expn[[2]]],
      ExpnType[expn[[1]]],
    If[Head[expn[[2]]]===Rational,
      If[IntegerQ[expn[[1]]] || Head[expn[[1]]]===Rational,
        1,
      Max[ExpnType[expn[[1]]],2]],
    Max[ExpnType[expn[[1]]],ExpnType[expn[[2]]],3]]],
  If[Head[expn]===Plus || Head[expn]===Times,
    Max[ExpnType[First[expn]],ExpnType[Rest[expn]]],
  If[ElementaryFunctionQ[Head[expn]],
    Max[3,ExpnType[expn[[1]]]],
  If[SpecialFunctionQ[Head[expn]],
    Apply[Max,Append[Map[ExpnType,Apply[List,expn]],4]],
  If[HypergeometricFunctionQ[Head[expn]],
    Apply[Max,Append[Map[ExpnType,Apply[List,expn]],5]],
  If[AppellFunctionQ[Head[expn]],
    Apply[Max,Append[Map[ExpnType,Apply[List,expn]],6]],
  If[Head[expn]===RootSum,
    Apply[Max,Append[Map[ExpnType,Apply[List,expn]],7]],
  If[Head[expn]===Integrate || Head[expn]===Int,
    Apply[Max,Append[Map[ExpnType,Apply[List,expn]],8]],
  9]]]]]]]]]]]


ElementaryFunctionQ[func_] :=
  MemberQ[{
        Exp,Log,
        Sin,Cos,Tan,Cot,Sec,Csc,
        ArcSin,ArcCos,ArcTan,ArcCot,ArcSec,ArcCsc,
        Sinh,Cosh,Tanh,Coth,Sech,Csch,
        ArcSinh,ArcCosh,ArcTanh,ArcCoth,ArcSech,ArcCsch
},func]


SpecialFunctionQ[func_] :=
  MemberQ[{
        Erf, Erfc, Erfi,
        FresnelS, FresnelC,
        ExpIntegralE, ExpIntegralEi, LogIntegral,
        SinIntegral, CosIntegral, SinhIntegral, CoshIntegral,
        Gamma, LogGamma, PolyGamma,
        Zeta, PolyLog, ProductLog,
        EllipticF, EllipticE, EllipticPi
},func]


HypergeometricFunctionQ[func_] :=
  MemberQ[{Hypergeometric1F1,Hypergeometric2F1,HypergeometricPFQ},func]
```

```
AppellFunctionQ[func_] :=
  MemberQ[{AppellF1},func]
```

4.0.2 Maple grading function

```
# File: GradeAntiderivative.mpl
# Original version thanks to Albert Rich emailed on 03/21/2017

#Nasser 03/22/2017  Use Maple leaf count instead since buildin
#Nasser 03/23/2017  missing 'ln' for ElementaryFunctionQ added
#Nasser 03/24/2017  corrected the check for complex result
#Nasser 10/27/2017  check for leafsize and do not call ExpnType()
#                   if leaf size is "too large". Set at 500,000
#Nasser 12/22/2019  Added debug flag, added 'dilog' to special functions
#                   see problem 156, file Apostol_Problems

GradeAntiderivative := proc(result,optimal)
local leaf_count_result, leaf_count_optimal,ExpnType_result,ExpnType_optimal,
   debug:=false;

      leaf_count_result:=leafcount(result);
      #do NOT call ExpnType() if leaf size is too large. Recursion problem
      if leaf_count_result > 500000 then
          return "B";
      fi;

      leaf_count_optimal:=leafcount(optimal);

      ExpnType_result:=ExpnType(result);
      ExpnType_optimal:=ExpnType(optimal);

      if debug then
         print("ExpnType_result",ExpnType_result," ExpnType_optimal=",
   ExpnType_optimal);
      fi;

# If result and optimal are mathematical expressions,
#  GradeAntiderivative[result,optimal] returns
#   "F" if the result fails to integrate an expression that
#       is integrable
#   "C" if result involves higher level functions than necessary
#   "B" if result is more than twice the size of the optimal
#       antiderivative
#   "A" if result can be considered optimal

  #This check below actually is not needed, since I only
  #call this grading only for passed integrals. i.e. I check
  #for "F" before calling this. But no harm of keeping it here.
  #just in case.


  if not type(result,freeof('int')) then
     return "F";
  end if;


  if ExpnType_result<=ExpnType_optimal then
      if debug then
          print("ExpnType_result<=ExpnType_optimal");
      fi;
```

```
      if is_contains_complex(result) then
         if is_contains_complex(optimal) then
            if debug then
               print("both result and optimal complex");
            fi;
            #both result and optimal complex
            if leaf_count_result<=2*leaf_count_optimal then
               return "A";
            else
               return "B";
            end if
         else #result contains complex but optimal is not
            if debug then
               print("result contains complex but optimal is not");
            fi;
            return "C";
         end if
      else # result do not contain complex
           # this assumes optimal do not as well
           if debug then
               print("result do not contain complex, this assumes optimal do
   not as well");
           fi;
           if leaf_count_result<=2*leaf_count_optimal then
              if debug then
                 print("leaf_count_result<=2*leaf_count_optimal");
              fi;
              return "A";
           else
              if debug then
                 print("leaf_count_result>2*leaf_count_optimal");
              fi;
              return "B";
           end if
      end if
  else #ExpnType(result) > ExpnType(optimal)
      if debug then
         print("ExpnType(result) > ExpnType(optimal)");
      fi;
      return "C";
  end if

end proc:

#
# is_contains_complex(result)
# takes expressions and returns true if it contains "I" else false
#
#Nasser 032417
is_contains_complex:= proc(expression)
  return (has(expression,I));
end proc:

# The following summarizes the type number assigned an expression
# based on the functions it involves
# 1 = rational function
# 2 = algebraic function
# 3 = elementary function
# 4 = special function
# 5 = hyperpergeometric function
# 6 = appell function
# 7 = rootsum function
# 8 = integrate function
```

```
# 9 = unknown function

ExpnType := proc(expn)
  if type(expn,'atomic') then
    1
  elif type(expn,'list') then
    apply(max,map(ExpnType,expn))
  elif type(expn,'sqrt') then
    if type(op(1,expn),'rational') then
       1
    else
       max(2,ExpnType(op(1,expn)))
    end if
  elif type(expn,'`^`') then
    if type(op(2,expn),'integer') then
      ExpnType(op(1,expn))
    elif type(op(2,expn),'rational') then
      if type(op(1,expn),'rational') then
         1
      else
         max(2,ExpnType(op(1,expn)))
      end if
    else
         max(3,ExpnType(op(1,expn)),ExpnType(op(2,expn)))
    end if
  elif type(expn,'`+`') or type(expn,'`*`') then
    max(ExpnType(op(1,expn)),max(ExpnType(rest(expn))))
  elif ElementaryFunctionQ(op(0,expn)) then
    max(3,ExpnType(op(1,expn)))
  elif SpecialFunctionQ(op(0,expn)) then
    max(4,apply(max,map(ExpnType,[op(expn)])))
  elif HypergeometricFunctionQ(op(0,expn)) then
    max(5,apply(max,map(ExpnType,[op(expn)])))
  elif AppellFunctionQ(op(0,expn)) then
    max(6,apply(max,map(ExpnType,[op(expn)])))
  elif op(0,expn)='int' then
    max(8,apply(max,map(ExpnType,[op(expn)]))) else
  9
  end if
end proc:


ElementaryFunctionQ := proc(func)
  member(func,[
        exp,log,ln,
        sin,cos,tan,cot,sec,csc,
        arcsin,arccos,arctan,arccot,arcsec,arccsc,
        sinh,cosh,tanh,coth,sech,csch,
        arcsinh,arccosh,arctanh,arccoth,arcsech,arccsch])
end proc:

SpecialFunctionQ := proc(func)
  member(func,[
        erf,erfc,erfi,
        FresnelS,FresnelC,
        Ei,Ei,Li,Si,Ci,Shi,Chi,
        GAMMA,lnGAMMA,Psi,Zeta,polylog,dilog,LambertW,
        EllipticF,EllipticE,EllipticPi])
end proc:

HypergeometricFunctionQ := proc(func)
  member(func,[Hypergeometric1F1,hypergeom,HypergeometricPFQ])
end proc:
```

```
AppellFunctionQ := proc(func)
  member(func,[AppellF1])
end proc:

# u is a sum or product.  rest(u) returns all but the
# first term or factor of u.
rest := proc(u) local v;
  if nops(u)=2 then
     op(2,u)
  else
     apply(op(0,u),op(2..nops(u),u))
  end if
end proc:

#leafcount(u) returns the number of nodes in u.
#Nasser 3/23/17  Replaced by build-in leafCount from package in Maple
leafcount := proc(u)
   MmaTranslator[Mma][LeafCount](u);
end proc:
```

4.0.3 Sympy grading function

```
#Dec 24, 2019. Nasser M. Abbasi:
#              Port of original Maple grading function by
#              Albert Rich to use with Sympy/Python
#Dec 27, 2019  Nasser. Added `RootSum`. See problem 177, Timofeev file
#              added 'exp_polar'
from sympy import *

def leaf_count(expr):
    #sympy do not have leaf count function. This is approximation
    return round(1.7*count_ops(expr))

def is_sqrt(expr):
    if isinstance(expr,Pow):
        if expr.args[1] == Rational(1,2):
            return True
        else:
            return False
    else:
        return False

def is_elementary_function(func):
    return func in [exp,log,ln,sin,cos,tan,cot,sec,csc,
            asin,acos,atan,acot,asec,acsc,sinh,cosh,tanh,coth,sech,csch,
            asinh,acosh,atanh,acoth,asech,acsch
        ]

def is_special_function(func):
    return func in [ erf,erfc,erfi,
             fresnels,fresnelc,Ei,Ei,Li,Si,Ci,Shi,Chi,
             gamma,loggamma,digamma,zeta,polylog,LambertW,
             elliptic_f,elliptic_e,elliptic_pi,exp_polar
         ]

def is_hypergeometric_function(func):
    return func in [hyper]

def is_appell_function(func):
    return func in [appellf1]
```

```
def is_atom(expn):
    try:
        if expn.isAtom or isinstance(expn,int) or isinstance(expn,float):
           return True
        else:
           return False

    except AttributeError as error:
        return False

def expnType(expn):
    debug=False
    if debug:
        print("expn=",expn,"type(expn)=",type(expn))

    if is_atom(expn):
       return 1
    elif isinstance(expn,list):
        return max(map(expnType, expn))   #apply(max,map(ExpnType,expn))
    elif  is_sqrt(expn):
        if isinstance(expn.args[0],Rational): #type(op(1,expn),'rational')
            return 1
        else:
            return max(2,expnType(expn.args[0]))  #max(2,ExpnType(op(1,expn)))
    elif isinstance(expn,Pow):   #type(expn,'`^`')
        if isinstance(expn.args[1],Integer):  #type(op(2,expn),'integer')
            return expnType(expn.args[0])   #ExpnType(op(1,expn))
        elif isinstance(expn.args[1],Rational):  #type(op(2,expn),'rational')
            if isinstance(expn.args[0],Rational): #type(op(1,expn),'rational')
                return 1
            else:
                return max(2,expnType(expn.args[0]))  #max(2,ExpnType(op(1,expn
   )))
        else:
            return max(3,expnType(expn.args[0]),expnType(expn.args[1])) #max(3,
   ExpnType(op(1,expn)),ExpnType(op(2,expn)))
    elif isinstance(expn,Add) or isinstance(expn,Mul): #type(expn,'`+`') or
   type(expn,'`*`')
        m1 = expnType(expn.args[0])
        m2 = expnType(list(expn.args[1:]))
        return max(m1,m2)  #max(ExpnType(op(1,expn)),max(ExpnType(rest(expn))))
    elif is_elementary_function(expn.func):  #ElementaryFunctionQ(op(0,expn))
        return max(3,expnType(expn.args[0]))  #max(3,ExpnType(op(1,expn)))
    elif is_special_function(expn.func): #SpecialFunctionQ(op(0,expn))
        m1 = max(map(expnType, list(expn.args)))
        return max(4,m1)   #max(4,apply(max,map(ExpnType,[op(expn)])))
    elif is_hypergeometric_function(expn.func): #HypergeometricFunctionQ(op(0,
   expn))
        m1 = max(map(expnType, list(expn.args)))
        return max(5,m1)   #max(5,apply(max,map(ExpnType,[op(expn)])))
    elif is_appell_function(expn.func):
        m1 = max(map(expnType, list(expn.args)))
        return max(6,m1)   #max(5,apply(max,map(ExpnType,[op(expn)])))
    elif isinstance(expn,RootSum):
        m1 = max(map(expnType, list(expn.args))) #Apply[Max,Append[Map[ExpnType
   ,Apply[List,expn]],7]],
        return max(7,m1)
    elif str(expn).find("Integral") != -1:
        m1 = max(map(expnType, list(expn.args)))
        return max(8,m1)   #max(5,apply(max,map(ExpnType,[op(expn)])))
    else:
        return 9
```

```
#main function
def grade_antiderivative(result,optimal):

    leaf_count_result  = leaf_count(result)
    leaf_count_optimal = leaf_count(optimal)

    expnType_result  = expnType(result)
    expnType_optimal = expnType(optimal)

    if str(result).find("Integral") != -1:
        return "F"

    if expnType_result <= expnType_optimal:
        if result.has(I):
            if optimal.has(I): #both result and optimal complex
                if leaf_count_result <= 2*leaf_count_optimal:
                    return "A"
                else:
                    return "B"
            else: #result contains complex but optimal is not
                return "C"
        else: # result do not contain complex, this assumes optimal do not as
   well
            if leaf_count_result <= 2*leaf_count_optimal:
                return "A"
            else:
                return "B"
    else:
        return "C"
```

4.0.4 SageMath grading function

```
#Dec 24, 2019. Nasser: Ported original Maple grading function by
#              Albert Rich to use with Sagemath. This is used to
#              grade Fricas, Giac and Maxima results.
#Dec 24, 2019. Nasser: Added 'exp_integral_e' and 'sng', 'sin_integral'
#              'arctan2','floor','abs','log_integral'

from sage.all import *
from sage.symbolic.operators import add_vararg, mul_vararg

debug=False;

def tree_size(expr):
    r"""
    Return the tree size of this expression.
    """
    if expr not in SR:
        # deal with lists, tuples, vectors
        return 1 + sum(tree_size(a) for a in expr)
    expr = SR(expr)
    x, aa = expr.operator(), expr.operands()
    if x is None:
        return 1
    else:
        return 1 + sum(tree_size(a) for a in aa)

def is_sqrt(expr):
    if expr.operator() == operator.pow:   #isinstance(expr,Pow):
        if expr.operands()[1]==1/2: #expr.args[1] == Rational(1,2):
            if debug: print ("expr is sqrt")
            return True
```

```
        else:
            return False
    else:
        return False

def is_elementary_function(func):
    debug=False
    m = func.name() in ['exp','log','ln',
            'sin','cos','tan','cot','sec','csc',
            'arcsin','arccos','arctan','arccot','arcsec','arccsc',
            'sinh','cosh','tanh','coth','sech','csch',
            'arcsinh','arccosh','arctanh','arccoth','arcsech','arccsch','sgn',
        'arctan2','floor','abs'
        ]
    if debug:
        if m:
            print ("func ", func , " is elementary_function")
        else:
            print ("func ", func , " is NOT elementary_function")


    return m

def is_special_function(func):
    debug=False
    if debug: print ("type(func)=", type(func))

    m= func.name() in ['erf','erfc','erfi','fresnel_sin','fresnel_cos','Ei',
           'Ei','Li','Si','sin_integral','Ci','cos_integral','Shi','
    sinh_integral'
           'Chi','cosh_integral','gamma','log_gamma','psi,zeta',
           'polylog','lambert_w','elliptic_f','elliptic_e',
           'elliptic_pi','exp_integral_e','log_integral']

    if debug:
        print ("m=",m)
        if m:
            print ("func ", func ," is special_function")
        else:
            print ("func ", func ," is NOT special_function")


    return m


def is_hypergeometric_function(func):
    return func.name() in ['hypergeometric','hypergeometric_M','
    hypergeometric_U']

def is_appell_function(func):
    return func.name() in ['hypergeometric']   #[appellf1] can't find this in
    sagemath

def is_atom(expn):

    debug=False
    if debug: print ("Enter is_atom")


    #thanks to answer at https://ask.sagemath.org/question/49179/what-is-
    sagemath-equivalent-to-atomic-type-in-maple/
    try:
        if expn.parent() is SR:
```

```
            return expn.operator() is None
        if expn.parent() in (ZZ, QQ, AA, QQbar):
            return expn in expn.parent() # Should always return True
        if hasattr(expn.parent(),"base_ring") and hasattr(expn.parent(),"gens")
    :
            return expn in expn.parent().base_ring() or expn in expn.parent().
    gens()
        return False

    except AttributeError as error:
        return False


def expnType(expn):

    if debug:
        print (">>>>>Enter expnType, expn=", expn)
        print (">>>>>is_atom(expn)=", is_atom(expn))

    if is_atom(expn):
        return 1
    elif type(expn)==list:   #isinstance(expn,list):
        return max(map(expnType, expn))   #apply(max,map(ExpnType,expn))
    elif  is_sqrt(expn):
        if  type(expn.operands()[0])==Rational: #type(isinstance(expn.args[0],
    Rational):
            return 1
        else:
            return max(2,expnType(expn.operands()[0]))  #max(2,expnType(expn.
    args[0]))
    elif expn.operator() == operator.pow:   #isinstance(expn,Pow)
        if type(expn.operands()[1])==Integer:  #isinstance(expn.args[1],Integer
    )
            return expnType(expn.operands()[0])   #expnType(expn.args[0])
        elif type(expn.operands()[1])==Rational:  #isinstance(expn.args[1],
    Rational)
            if type(expn.operands()[0])==Rational: #isinstance(expn.args[0],
    Rational)
                return 1
            else:
                return max(2,expnType(expn.operands()[0]))  #max(2,expnType(
    expn.args[0]))
        else:
            return max(3,expnType(expn.operands()[0]),expnType(expn.operands()
    [1])) #max(3,expnType(expn.operands()[0]),expnType(expn.operands()[1]))
    elif expn.operator() == add_vararg or expn.operator() == mul_vararg: #
    isinstance(expn,Add) or isinstance(expn,Mul)
        m1 = expnType(expn.operands()[0]) #expnType(expn.args[0])
        m2 = expnType(expn.operands()[1:]) #expnType(list(expn.args[1:]))
        return max(m1,m2)  #max(ExpnType(op(1,expn)),max(ExpnType(rest(expn))))
    elif is_elementary_function(expn.operator()):  #is_elementary_function(expn
    .func)
        return max(3,expnType(expn.operands()[0]))
    elif is_special_function(expn.operator()): #is_special_function(expn.func)
        m1 = max(map(expnType, expn.operands()))      #max(map(expnType, list(
    expn.args)))
        return max(4,m1)   #max(4,m1)
    elif is_hypergeometric_function(expn.operator()): #
    is_hypergeometric_function(expn.func)
        m1 = max(map(expnType, expn.operands()))       #max(map(expnType, list(
    expn.args)))
        return max(5,m1)   #max(5,m1)
    elif is_appell_function(expn.operator()):
```

```
        m1 = max(map(expnType, expn.operands()))       #max(map(expnType, list(
    expn.args)))
        return max(6,m1)   #max(6,m1)
    elif str(expn).find("Integral") != -1: #this will never happen, since it
                #is checked before calling the grading function that is passed.
                #but kept it here.
        m1 = max(map(expnType, expn.operands()))       #max(map(expnType, list(
    expn.args)))
        return max(8,m1)   #max(5,apply(max,map(ExpnType,[op(expn)])))
    else:
        return 9

#main function
def grade_antiderivative(result,optimal):

    if debug: print ("Enter grade_antiderivative for sagemath")

    leaf_count_result  = tree_size(result) #leaf_count(result)
    leaf_count_optimal = tree_size(optimal) #leaf_count(optimal)

    if debug: print ("leaf_count_result=", leaf_count_result, "
    leaf_count_optimal=",leaf_count_optimal)


    expnType_result  = expnType(result)
    expnType_optimal = expnType(optimal)

    if debug: print ("expnType_result=", expnType_result, "expnType_optimal=",
    expnType_optimal)

    if expnType_result <= expnType_optimal:
        if result.has(I):
            if optimal.has(I): #both result and optimal complex
                if leaf_count_result <= 2*leaf_count_optimal:
                    return "A"
                else:
                    return "B"
            else: #result contains complex but optimal is not
                return "C"
        else: # result do not contain complex, this assumes optimal do not as
    well
            if leaf_count_result <= 2*leaf_count_optimal:
                return "A"
            else:
                return "B"
    else:
        return "C"
```